ISSUE 14

INTERVIEWS

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WELCOME COMMODORE INTERVIEWS PHOTOS MOVIE PERIODICALS

ISSUE 14

INTERVIEWS

commodore
VIC 20
A Personal Computer EVERYONE Can Afford

BILL SEILER
JOHN FEAGANS
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INTRODUCTION

1996 / 1997

I CONDUCTED THESE INTERVIEWS IN LATE 1996 / EARLY 1997 WHEN THE VERY FIRST VIC-20 EMULATORS STARTED SHOWING UP ON THE INTERNET. I WANTED TO BEGIN LEARNING SOME HTML BUT DIDN'T HAVE MANY IDEAS FOR ORIGINAL CONTENT. THE WORLD-WIDE-WEB WAS STILL RAMPING UP IN THOSE DAYS AND THERE WASN'T ANYTHING ONLINE OF THIS TYPE, SO I MADE THE DECISION TO DO IT. I HAVE A LOT OF RESPECT FOR ENGINEERS IN GENERAL AND PASSION FOR THE VIC-20 IN PARTICULAR, SO IT WAS GREAT FUN TO CONTACT THESE GUYS AND GET A THOUGHTFUL REPLY FROM THEM IN RETURN.

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Paul Higginbottom Remembers the VIC-20

- from an interview conducted by Rick Melick on March 18, 1997

>Describe your work for Commodore and your role in the VIC-20?

I worked for Commodore from 1979 to the end of 1991 in a variety of roles in development, marketing, support and even training. The variety of work was what made working at Commodore so great. You could definitely make a job and go and do it if you had initiative.

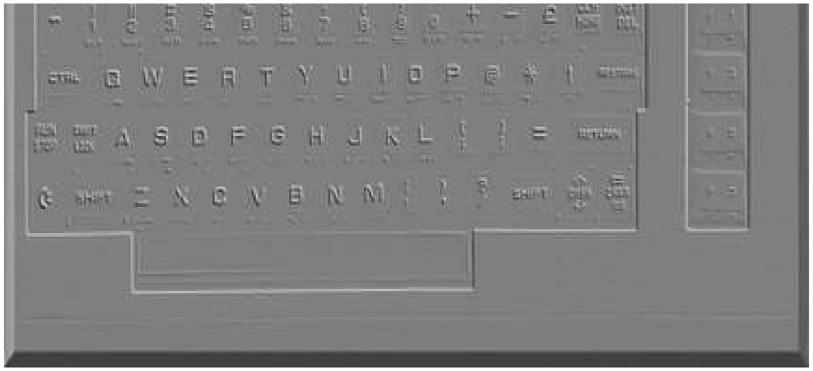
I started work with Commodore in England, and in 1980, I think, someone gave me a VIC-20 prototype to evaluate, knowing that I loved getting new things to learn as much as I could about. Around the same time I accepted an offer to emigrate to Canada and work at Commodore's tiny Canadian computer division (about 4 people when I started). Until I could get the paperwork straightened out to emigrate, and because people at Commodore in the UK had sort of written me off as 'that guy who's leaving us anyway' I could spend 100% of my time learning the capabilities of the VIC-20. Therefore, when I got to Canada, Jim Dionne, who ran the Canadian computer division and had offered me the job, made me the VIC-20 Product Manager. In this 'one man' capacity, I did everything (not necessarily well) from setting prices and ordering product from California and Japan, producing television and print commercials, writing demo programs and utilities, supporting dealers and customers on the phone, to working closely with Commodore U.S., so we could synchronize with what they were doing and help in whatever way we could. Canada made a couple of really great contributions to VIC history: Jim Butterfield, and Karl Hildon's Transactor Magazine. I worked with Karl at Commodore Canada and he's a great guy. Jim is a walking encyclopedia, great communicator, and terrific entertainer. I'm sure all readers are familiar with his prolific contributions to the computer industry. Jim was a great fast moving target I tried hard to keep up with.

>Describe your knowledge of the corporate climate and work environment at Commodore?

I think it would best be described as an intense one, bordering on chaos. It worked though, because there was so much talent at the company over the years, and because the founder, Jack Tramiel, was a quick decision maker with a clear idea of what he wanted to do. Until he left, the company was definitely run closely by Jack, who was very intense, somewhat unpredictable, and often intimidating, although he seemed to 'micromanage' much more of the U.S. operation than elsewhere. After he left, the company was never the same, in some ways for the better, because like many founders, Jack wasn't the right person in my opinion, to run a billion dollar company. It had one real chance to go further after that, with Tom Rattigan at the helm, but unfortunately the company wasn't big enough for him and the Chairman, Irving Gould. After that, it was down hill.

>How did your work on the Commodore VIC-20 help you with your career today?

Given my understanding of the PET, the VIC-20 came fairly easily, but the experience of launching a wildly successful product (the VIC-20) was obviously a tremendous learning and growth opportunity. I did enjoy reading the other interviews you've done, and recall one bit of trivia. Working at Commodore in Canada, I spent a fair bit of time on the phone with Andy Finkel, Neil Harris, and



Mike Tomczyk, south of the border. I think they had the impression I was a lot older than I was and when I eventually visited their office near Philadelphia (which amazed me because it was so cramped and chaotic), I think they were surprised to meet this 'kid' who barely had to shave. :-)

>What are you doing these days?

I am Technical Director at Geac Computer Systems, formerly Dun & Bradstreet Software. I am in the process of relocating from near where Commodore's head office was in Pennsylvania, to Atlanta, Georgia. I oversee a variety of software development projects, mostly related to Microsoft BackOffice (including Windows NT, Microsoft SQL Server, etc). Last year, I oversaw a project to make the company's software compatible with Microsoft SQL Server and more integrated with Microsoft BackOffice.

When I left Commodore, I went to Great Valley Products, the largest producer of add-on hardware for the Amiga at the time, and had a great time helping them manage 100+% growth, filling in the holes that Commodore was leaving in the product line. Then I realized I had to get into the PC business because Commodore was dying. I also decided that I wanted to be in software development full time and so I bought a fully loaded PC and taught myself Windows, C++ programming, PCs, and went on into running client/server software development teams. Having started with BASIC on the PET, I'm still in love with it, and think Visual Basic on the PC is an incredible tool. I'm also quite heavily into Java, which is what C++ should have been.

In summary, I'm still a techie, but with a business focus toward getting large software systems delivered.

>Does the VIC-20 hold a special place for you, or was it no more/less significant than the machine on your desk right now?

The PET, the VIC-20, the C64, and the Amiga models each hold a special place because each was a milestone. The VIC-20 was a breakthrough in price performance, and paved the way to the C64, which was a quantum leap forward, followed by the Amiga, which was another quantum leap.

As far as what's on my desk right now, I've become a BIG fan of notebook computers in the past few years. The ability to carry around a computing powerhouse is terrific. I travel a lot and so being able to work on planes, in airports, in hotel rooms, etc., is a wonderful thing.

>The VIC-20 Programmer's reference Guide was an excellent publication. How long did it take to compose, and what were some of the unique challenges in writing it?

Thanks. My contribution didn't take long as I recall (a couple of weeks maybe). It couldn't take long because we were all under tremendous time pressure. I would have gladly worked any amount of hours though because I knew people would appreciate the information and it was neat to be contributing to a book.

>What do you think of the VIC-20 emulators, and the effort to preserve the history of the VIC-20 for future generations of computer enthusiasts?

I think it's great, although I think it will be difficult. I recently saved an original 8K PET in perfect working order that someone was going to throw away! I showed it to someone else who thought it was quaint, but couldn't imagine why I would want it. Oh well, I guess you had to have been there.

--Paul

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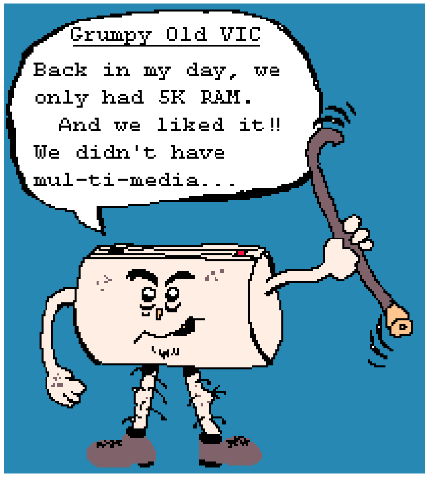
John Feagans Remembers the VIC-20

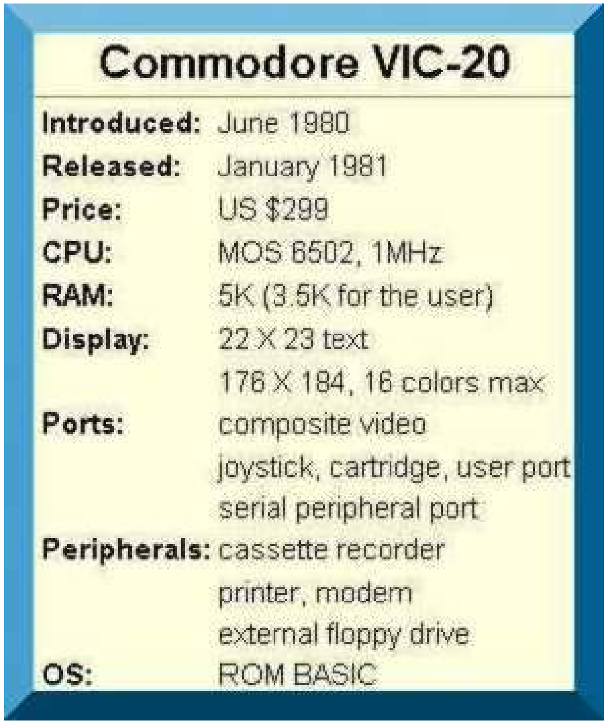
- from and interview conducted by Rick Melick on March 18, 1997

>John, tell me about the VIC-20...

Peddle never had any involvement with the VIC-20.

The Yannes prototype was shown at the June 1980 CES in Chicago. Peddle left Commodore to start Sirius/Victor in August, 1980.


Grumpy Old VIC
Back in my day, we only had 5K RAM. And we liked it!! We didn't have mul-ti-media...



Commodore VIC-20	
Introduced:	June 1980
Released:	January 1981
Price:	US $299
CPU:	MOS 6502, 1MHz
RAM:	5K (3.5K for the user)
Display:	22 X 23 text 176 X 184, 16 colors max
Ports:	composite video joystick, cartridge, user port serial peripheral port
Peripherals:	cassette recorder printer, modem external floppy drive
OS:	ROM BASIC

Bill Seiler and I did the Vic-20 hardware software work at the Moorepark advanced R&D facility in San Jose, California. We were ordered to transfer our work to the production engineering group in Santa Clara. The R&D facility was closed in September, 1980 and the people who didn't leave for Sirius, including myself, moved back to Santa Clara, 3330 Scott Blvd.

Bill Seiler left Commodre in November, 1980 for Sirius.

As you know the Vic-1001 was introduced first in Japan. My wife translated the user's manual from Japanese to English and this was the basis of the user's manual Mike Tomczyk worked on.

For the Commodore-64 I developed a music interpretive language which played the SID at the January 1982 CES, the Magic Desk at the June 1983 CES in Chicago on the "Commodore Clipper", and a cheap network using the Teacher's PET, and twisted pairs to C-64's in a classroom.

I went on to Atari where with a team from Digital Research, ported GEM from the PC to the Atari ST, a 68k based machine.

Currently I work for US Robotics, Advanced R&D. I implement ITU protocols for Video conferencing. Some shipping products with my code are the WinModem, "Big Picture" H.324 system, and Sportster DSVD.

Grass Valley Advanced R&D is located an hour northeast of Sacramento in the foothills of the Sierra. We are three hours from "Silly Valley" and recruiting!

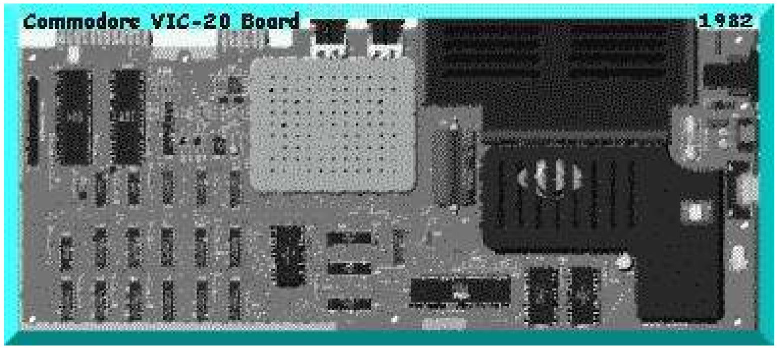
You need to look up Bob Russel. He took our code from Advanced R&D and did things like modify the cassette tape routines (with consulting from Chuck Peddle on how the PET cassette worked) and the serial interface to the disk drive and printers. He was part of the production engineering team in Santa Clara and later moved to Valley Forge, then Wayne, and last West Chester. He ported the Vic-20 code to the Vic-40 (aka Commodore-64)

Did you know that the disk drive interface was based off the IEEE-488? That is what Bill Seiler and I implemented on the original PET. When the Vic-20 peripherals were designed we had the Atari 400 as a model of a serial system and hence we altered the parallel IEEE-488 to a serial version with the same handshake lines. It was a software bit banger serial and had horrid performance.

>Yes, here is what is on my page about a 6522 "bug" (the ones PET owners
>also used to get the "CB2 sound") This is from Jim Butterfield. Is it
>accurate?

> **"As you know, the first Commodore computers used the IEEE bus to connect to peripherals such as disk and printer. I understand that these were available only from one source: Belden cables. A couple of years into Commodore's computer career, Belden went out of stock on such cables (military contract? who knows?). In any case, Commodore were in quite a fix: they made computers and disk drives, but couldn't hook 'em together!**
>
> **So Tramiel issued the order: "On our next computer, get off that bus. Make it a cable anyone can manufacture". And so, starting with the VIC-20 the serial bus was born. It was intended to be just as fast as the IEEE-488 it replaced.**
>
> **Technically, the idea was sound: the 6522 VIA chip has a "shift register" circuit that, if tickled with the right signals (data and clock) will cheerfully collect 8 bits of data without any help from the CPU. At that time, it would signal that it had a byte to be collected, and the processor would do so, using an automatic handshake built into the 6522 to trigger the next incoming byte. Things worked in a similar way outgoing from the computer, too.**
>
> **We early PET/CBM freaks knew, from playing music, that there was something wrong with the 6522's shift register: it interfered with other functions. The rule was: turn off the music before you start the tape! (The shift register was a popular sound generator). But the Commodore engineers, who only made the chip, didn't know this. Until they got into final checkout of the VIC-20.**
>
> **By this time, the VIC-20 board was in manufacture. A new chip could be designed in a few months (yes, the silicon guys had application notes about the problem, long since), but it was TOO LATE!**

> **A major software rewrite had to take place that changed the VIC-20 into a "bit-catcher" rather than a "character-catcher". It called for eight times as much work on the part of the CPU; and unlike the shift register plan, there was no timing/handshake slack time. The whole thing slowed down by a factor of approximately 5 to 6.", Jiim Butterfield (1997)**



I won't dispute Jim Butterfield out of respect, but the main reason we went to the serial cable was connector size and cost. Also we were influenced by the Atari 400 and 800. We had an engineering manager in the R&D lab who did nothing all the summer of 1980 but play games on the Atari 400 we had for evaluation!

My mistake on "software bit banger". Yes the 6522 was a UART, but the whole system was not as fast as the parallel IEEE because of the delay while the thing shifted out.

I don't think the story on Belden holds water either--I still buy IEEE cables for our lab.

The C-64 serial bus had to be slowed down even more because of hits by the video that cause missed data.

--John

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Neil Harris Remembers the VIC-20

- from an interview conducted by Rick Melick on January 3, 1997

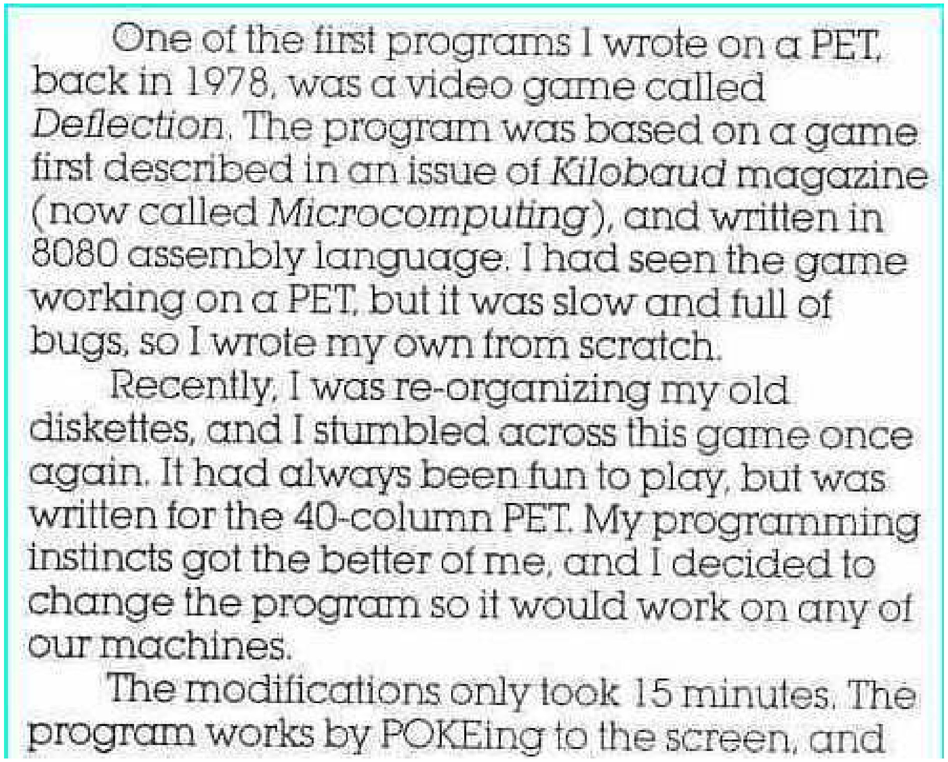
```
**** CBM BASIC V2 ****
3583 BYTES FREE
READY.
```

>Describe you position at Commodore and your role in the VIC-20

I was hired as a member of the VIC-20 product launch team in January, 1981. I reported to Mike Tomczyk, the product manager.

I had learned to program in BASIC during high school in the early 1970's. In the mid-70's, after dropping out of Cornell University, I was earning a living as a programmer, writing accounting software in BASIC. It was very dull work.

Then in 1978, Commodore opened a computer store in Philadelphia. I was hired there, and worked in several other retailers. I wrote several programs and articles for PET User Notes, and worked in several stores. Then one day I heard of a job fair that Commodore held soon after moving their offices from California to the Philadelphia suburbs. When I described my background to the human resources lady, including programming a PET, writing, and sales, she immediately steered me to Mike Tomczyk.



One of the first programs I wrote on a PET, back in 1978, was a video game called *Deflection*. The program was based on a game first described in an issue of *Kilobaud* magazine (now called *Microcomputing*), and written in 8080 assembly language. I had seen the game working on a PET, but it was slow and full of bugs, so I wrote my own from scratch.

Recently, I was re-organizing my old diskettes, and I stumbled across this game once again. It had always been fun to play, but was written for the 40-column PET. My programming instincts got the better of me, and I decided to change the program so it would work on any of our machines.

The modifications only took 15 minutes. The program works by POKEing to the screen, and

Mike was a huge influence on me and on the Vic-20. He was really the main man. On the org chart I don't know where he reported, but like most important people at Commodore he reported right to Jack Tramiel when it counted. Mike taught me a lot about marketing. After working for Mike, it was hard not to make that my career path.

On my first day on the job, Mike showed me a manuscript for the VIC-20 user manual, which had been written by an outside company. The book needed a lot of work. The Vic-20 group was so small that we could not get our hands on computers, so the very next day I brought in my old Smith Corona portable typewriter and rewrote the manual from the ground up.

About a month later I heard from an old friend- Andy Finkel, who I knew from my high school days -- we learned on the same computer system, worked at Star Trek conventions, and both went to Cornell. Andy was looking for work. I told Mike to interview him the next day and to hire him right away! Andy was a wizard, and he also knew the PET computer. The VIC was very much like a PET. And we needed the help.

I spent the first six months writing and programming. Then I was promoted to assistant product manager. Six months after that I was promoted to a sales support position, working for the sales team that got the VIC into K-Mart, Sears, and the other big accounts. A year later and I became manager of the publications group, including Commodore's magazines and the online area that opened on CompuServe. I left Commodore in late 1984, to join Atari along with many expatriated Commodorians.

>Describe the corporate climate and work environment at Commodore?

When I joined Commodore, it was about a $50 million a year company, most of the business coming from Europe. The US presence was virtually nonexistent.

The US company was mainly interested in selling PET and CBM computers into business. One oF the PET software managers used to joke that the VIC was something that would be given away free when someone bought a PET.

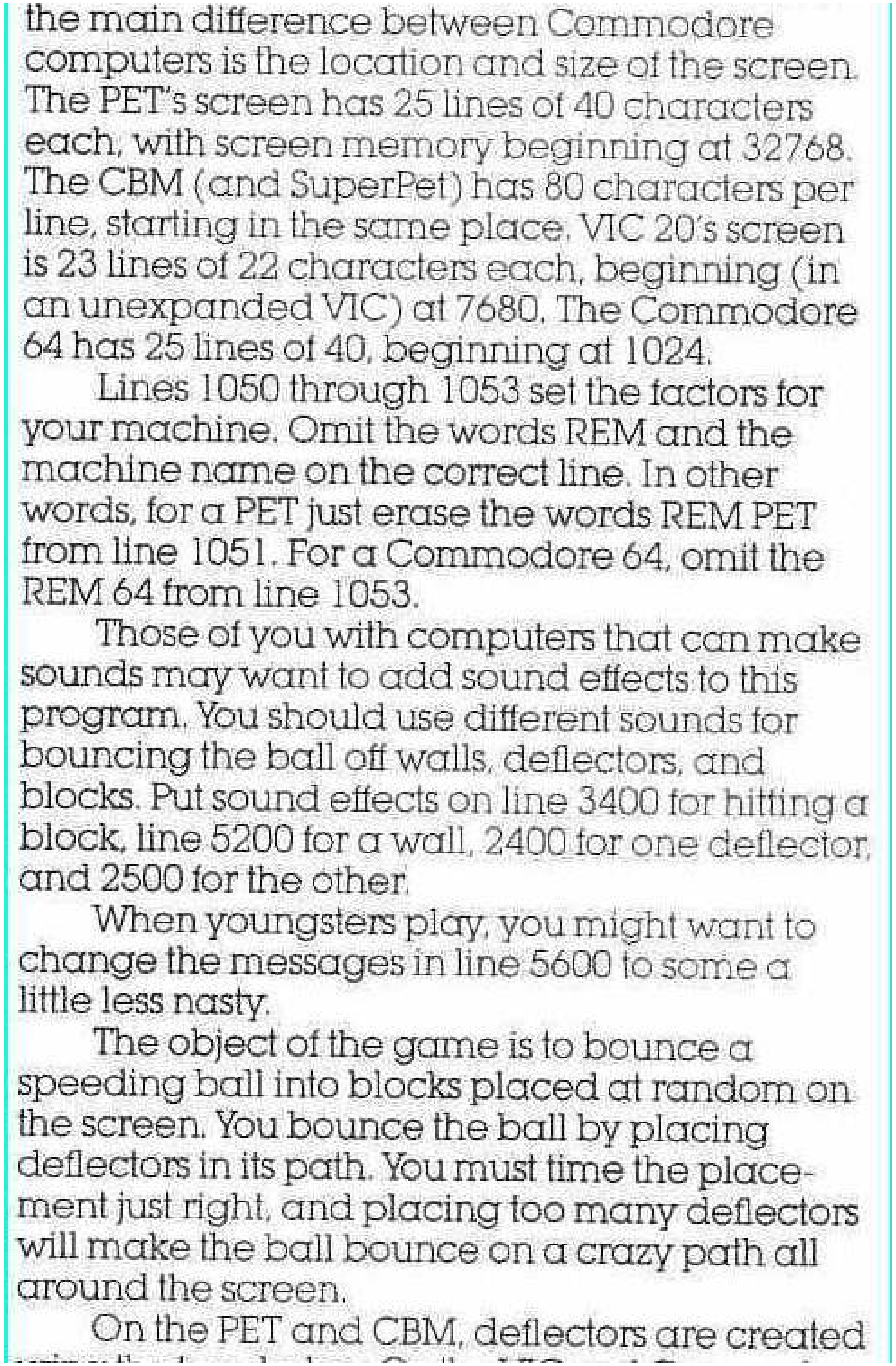
We knew better. Mike was careful to forge us into an independent team. We called ourselves the VIC Commandos. We did everything together, including taking long lunches at the local video arcades -- for R&D, of course.

Often we couldn't get supplies, or even office space. In the early months we crashed in the office of the service manager, who let three of us work on a table in half his office. Since we could rarely requisition equipment, we would stay late and swipe what we needed from the PET guys. They could get their requisitions filled for those missing pieces, and we got our work done.

>How did your work on the Commodore VIC-20 help you with your career today?

At Commodore I made the transition from techie to business. I became more confident in my abilities, seeing them applied to a huge industry instead of mom-and-pop computer stores. I became absolutely hooked on online services.

>What are you doing these days?



the main difference between Commodore computers is the location and size of the screen. The PET's screen has 25 lines of 40 characters each, with screen memory beginning at 32768. The CBM (and SuperPet) has 80 characters per line, starting in the same place. VIC 20's screen is 23 lines of 22 characters each, beginning (in an unexpanded VIC) at 7680. The Commodore 64 has 25 lines of 40, beginning at 1024.

Lines 1050 through 1053 set the factors for your machine. Omit the words REM and the machine name on the correct line. In other words, for a PET just erase the words REM PET from line 1051. For a Commodore 64, omit the REM 64 from line 1053.

Those of you with computers that can make sounds may want to add sound effects to this program. You should use different sounds for bouncing the ball off walls, deflectors, and blocks. Put sound effects on line 3400 for hitting a block, line 5200 for a wall, 2400 for one deflector, and 2500 for the other.

When youngsters play, you might want to change the messages in line 5600 to some a little less nasty.

The object of the game is to bounce a speeding ball into blocks placed at random on the screen. You bounce the ball by placing deflectors in its path. You must time the placement just right, and placing too many deflectors will make the ball bounce on a crazy path all around the screen.

On the PET and CBM, deflectors are created

I'm executive vice president of Simutronics Corp., the leader in creating multi-player computer games for the online services. I joined the company in 1993 after five years as GEnie's marketing director. While at GEnie I also went back to school, finally, and got a degree in business.

I'm part owner of the company, responsible for the money side of the business -- sales, finance, and marketing. We offer games including Gemstone, Dragonrealms, CyberStrike, and ArchMage on America Online and other services.

<u>>Does the VIC-20 hold a special place for you, or was it no more/less significant than the machine on your desk right now?</u>

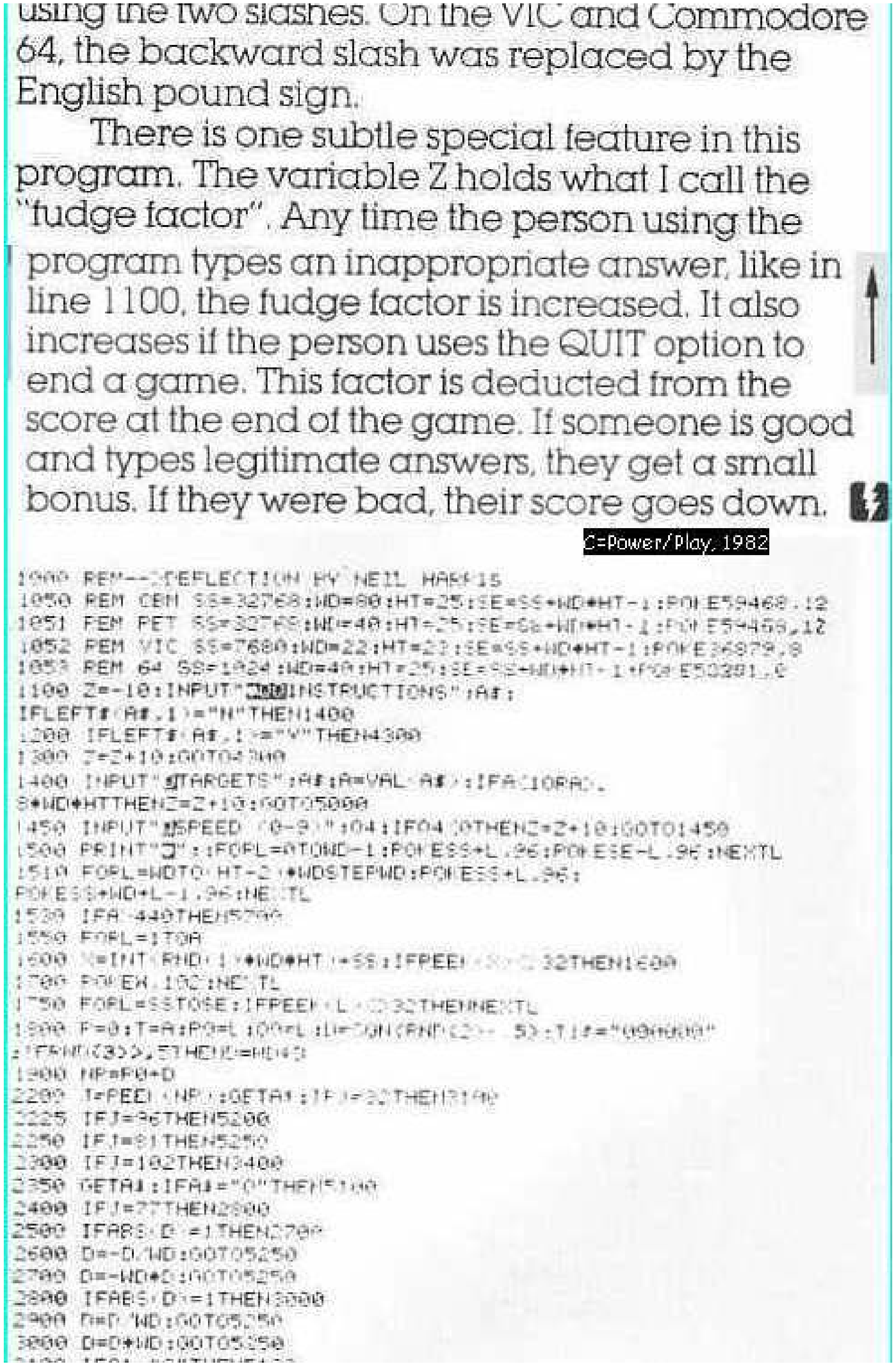
The VIC-20 was a special system at a special time for me. Despite the many obstacles, we succeeded as well as we expected, much more than anyone else might have expected. We were up against fierce competition and won.

On the other hand, don't try to get this Pentium system away from me. We've come a long way since 1981.

<u>>The VIC-20 Programmer's reference Guide was an excellent publication. How long did it take to compose, and what were some of the unique challenges in writing it?</u>

As PET hackers, we knew what information people needed, especially since so much of it had never been documented by Commodore. We jumped at the chance to write a definitive Programmers Reference Guide. We enlisted the aid of a young British programmer Paul Higginbottom and split up the technical work among the three of us (myself and Andy). I wrote the outline and the sections on BASIC. Mike Tomczyk wrote the introduction and some of the examples, and Andy and Paul tackled the memory maps and assembly language. The team was by-god-determined to open up everything inside the machine in order to make life as easy as possible for software developers.

We worried that people would get wind of what we were doing and forbid us from publishing the schematics. So we never, ever asked for permission.

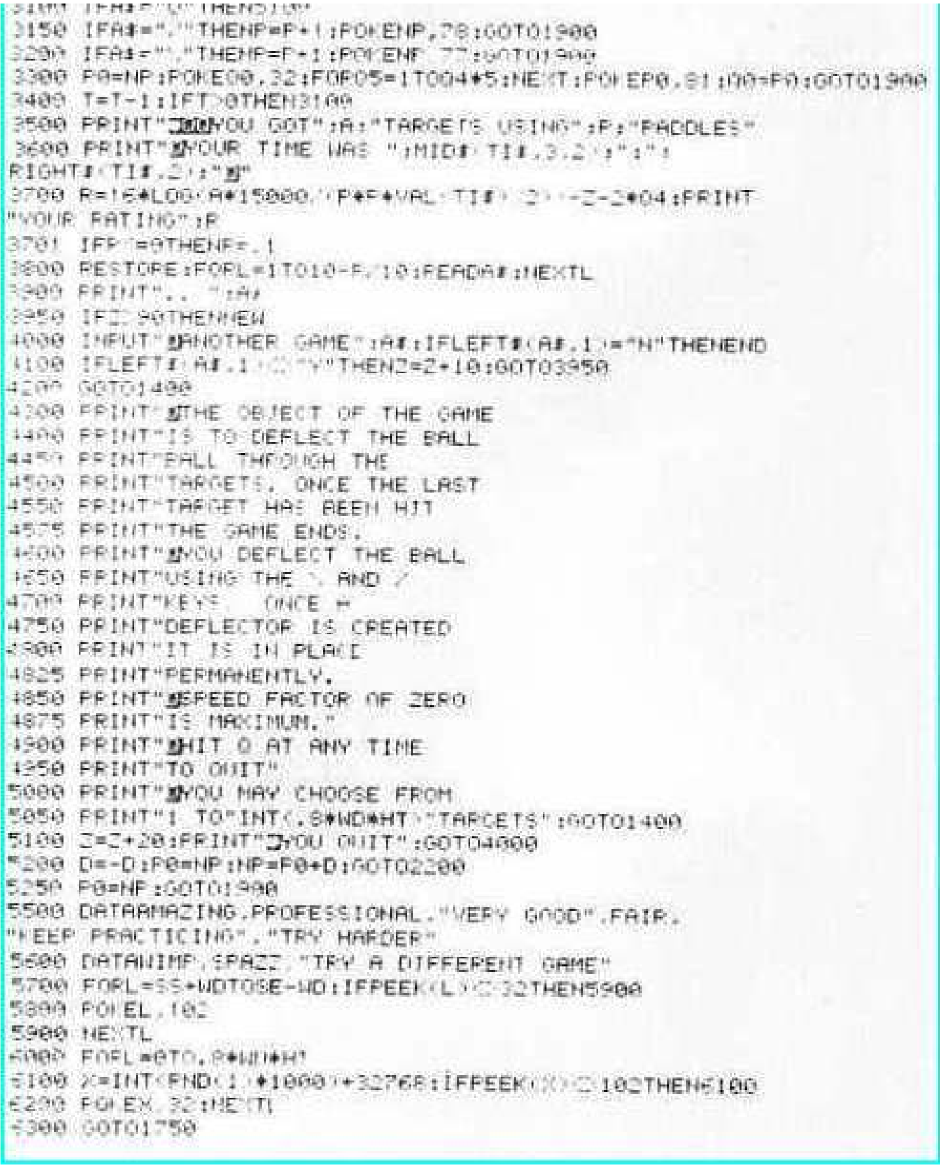


using the two slashes. On the VIC and Commodore 64, the backward slash was replaced by the English pound sign.

There is one subtle special feature in this program. The variable Z holds what I call the "fudge factor". Any time the person using the program types an inappropriate answer, like in line 1100, the fudge factor is increased. It also increases if the person uses the QUIT option to end a game. This factor is deducted from the score at the end of the game. If someone is good and types legitimate answers, they get a small bonus. If they were bad, their score goes down.

C=Power/Play, 1982

```
1000 REM--DEFLECTION BY NEIL HARRIS
1050 REM CBM SS=32768:WD=80:HT=25:SE=SS+WD*HT-1:POKE59468,12
1051 REM PET SS=32768:WD=40:HT=25:SE=SS+WD*HT-1:POKE59468,12
1052 REM VIC SS=7680:WD=22:HT=23:SE=SS+WD*HT-1:POKE36879,8
1053 REM 64 SS=1024:WD=40:HT=25:SE=SS+WD*HT-1:POKE53281,0
1100 Z=-10:INPUT"[illegible]INSTRUCTIONS";A$:
IFLEFT$(A$,1)="N"THEN1400
1200 IFLEFT$(A$,1)="Y"THEN4300
1300 Z=Z+10:GOTO4300
1400 INPUT"[illegible]TARGETS";A$:A=VAL(A$):IFA<1ORA>.
8*WD*HTTHENZ=Z+10:GOTO5000
1450 INPUT"[illegible]SPEED (0-9)";Q4:IFQ4<0THENZ=Z+10:GOTO1450
1500 PRINT"[illegible]":FORL=0TOWD-1:POKESS+L,96:POKESE-L,96:NEXTL
1510 FORL=WDTO(HT-2)*WDSTEPWD:POKESS+L,96:
POKESS+WD+L-1,96:NEXTL
1520 IFA>440THEN5700
1550 FORL=1TOA
1600 X=INT(RND(1)*WD*HT)+SS:IFPEEK(X)<>32THEN1600
1700 POKEX,102:NEXTL
1750 FORL=SSTOSE:IFPEEK(L)<>32THENNEXTL
1800 P=0:T=A:P0=L:00=L:D=SGN(RND(2)-.5):TI$="000000"
:IFRND(3)>.5THEND=WD*D
1900 NP=P0+D
2200 J=PEEK(NP):GETA$:IFJ=32THEN3100
2225 IFJ=86THEN5200
2250 IFJ=81THEN5250
2300 IFJ=102THEN3400
2350 GETA$:IFA$="Q"THEN5100
2400 IFJ=77THEN2800
2500 IFABS(D)=1THEN2700
2600 D=-D/WD:GOTO5250
2700 D=-WD*D:GOTO5250
2800 IFABS(D)=1THEN3000
2900 D=D/WD:GOTO5250
3000 D=D*WD:GOTO5250
```



```
3150 IFA$=","THENP=P+1:POKENP,78:GOTO1900
3200 IFA$="."THENP=P+1:POKENP,77:GOTO1900
3300 P0=NP:POKE00,32:FOR05=1TO04*5:NEXT:POKEP0,81:00=P0:GOTO1900
3400 T=T-1:IFT>0THEN3100
3500 PRINT"■■YOU GOT";A;"TARGETS USING";P;"PADDLES"
3600 PRINT"■YOUR TIME WAS ";MID$(TI$,3,2);":";
RIGHT$(TI$,2);"■"
3700 R=16*LOG(A*15000/(P*P*VAL(TI$)^2))-Z-2*04:PRINT
"YOUR RATING";R
3701 IFR<=0THENR=.1
3800 RESTORE:FORL=1TO10-R/10:READA$:NEXTL
3900 PRINT".. ";A$
3950 IFZ>90THENNEW
4000 INPUT"■ANOTHER GAME";A$:IFLEFT$(A$,1)="N"THENEND
4100 IFLEFT$(A$,1)<>"Y"THENZ=Z+10:GOTO3950
4200 GOTO1400
4300 PRINT"■THE OBJECT OF THE GAME
4400 PRINT"IS TO DEFLECT THE BALL
4450 PRINT"BALL THROUGH THE
4500 PRINT"TARGETS. ONCE THE LAST
4550 PRINT"TARGET HAS BEEN HIT
4575 PRINT"THE GAME ENDS.
4600 PRINT"■YOU DEFLECT THE BALL
4650 PRINT"USING THE \ AND /
4700 PRINT"KEYS.   ONCE A
4750 PRINT"DEFLECTOR IS CREATED
4800 PRINT"IT IS IN PLACE
4825 PRINT"PERMANENTLY.
4850 PRINT"■SPEED FACTOR OF ZERO
4875 PRINT"IS MAXIMUM."
4900 PRINT"■HIT Q AT ANY TIME
4950 PRINT"TO QUIT"
5000 PRINT"■YOU MAY CHOOSE FROM
5050 PRINT"1 TO"INT(.8*WD*HT)"TARGETS":GOTO1400
5100 Z=Z+20:PRINT"■YOU QUIT":GOTO4000
5200 D=-D:P0=NP:NP=P0+D:GOTO2200
5250 P0=NP:GOTO1900
5500 DATAAMAZING,PROFESSIONAL,"VERY GOOD",FAIR,
"KEEP PRACTICING","TRY HARDER"
5600 DATAWIMP,SPAZZ,"TRY A DIFFERENT GAME"
5700 FORL=SS+WDTOSE-WD:IFPEEK(L)<>32THEN5900
5800 POKEL,102
5900 NEXTL
6000 FORL=0TO.8*WD*HT
6100 X=INT(RND(1)*1000)+32768:IFPEEK(X)<>102THEN6100
6200 POKEX,32:NEXTL
6300 GOTO1750
```

>What do you think of the VIC-20 emulators, and the effort to preserve the history of the VIC-20 for future generations of computer enthusiasts?

It was a very strange feeling to boot up a VIC-20 emulator on my PC and see the old VIC BASIC prompt after all these years. My old demo tape still ran! (I can prove it's mine -- the screen with the mailing list puts my name in the blank.)

I'm all for history. Those who fail to learn from history are doomed to repeat it. The times were interesting then -- the industry was just forming and we were basically making it up as we went along. We tried to learn the right lessons even then, watching what Apple had done well.

>You worked on several programs published on cassette for the launch of the VIC-20. One was an educational title, Space math. Can you share some of your memories about the launch of the VIC-20? (Any idea where Duane Later is these days and how I can contact him?)

I haven't heard anything about Duane in years. He was really only part of the team at the beginning, for a few months.

The VIC-20 was launched only a few months after the team came together. We had lots to do. We wrote the manuals and the first software. We licensed the best titles we could find, including the text adventure games by Scott Adams.

Our sales force didn't understand why we thought people would like text games, but they ended up being our top-selling titles. We figured if they worked for Apple on a $2000 computer, they'd work for us on a $300 one. By the way, Andy Finkel is the hero on those games -- they were 24K of assembly code, but only 16K could fit on a cartridge. Somehow he shrunk a full third out of the games.

I also got to work on the VIC-20 box. We needed to make it look like there was lots of software. I got all the screen shots and tried to arrange them artfully, or at least so the colors were interesting.

I also worked on some ads. I personally conceptualized the ad that seemed to be the final nail in Atari and TI's coffins in the PC wars. The price of the computers was virtually identical, but we also kept the peripherals cheap. I wrote an ad that added up the whole systems and clearly showed the difference. From then on, the vast majority of sales were ours.

>Did programmers often work in teams at Commodore?

Our group worked as a team, and we pitched in to help each other a lot. In terms of BASIC, I had the most experience, so I endedup helping there. I was hopeless at assembly language, so people like Andy Finkel took the load.

>I also liked VIC21 Blackjack... Were there any other software titles you created? What about prototypes?

In the original cassette six-packs, I worked on Slither/Super Slither and VIC-21 myself. Duane Later was having trouble debugging Space math and he was busy with cartridge games, so I polished that one up, did the same for the personal finance tape that Lee Ancier created.

I was very proud of that blackjack game. Getting it to fit in 3.5K of available took dedication, especially since I wanted to include all the casino rules (splitting, doubling down) and also make it support 2 players.

Some of the tricks included stacking multiple statements on a line Since the : only took one byte and a new line number took 5. If you try to read that code, it's a big mess. I was a very clean structured programmer and it took a lot to avoid good habits and write spaghetti that would fit. I even jumped in and out of FOR-NEXT loops to save bytes.

Those were the days. You had to be a man to write code in 3.5K.

--Neil

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Boris van Schooten Remembers the VIC-20;
On the PCVIC Emulator°
- from an interview conducted by Rick Melick on December 27, 1996

° - Requires DOSbox on Windows XP. D-Fend is the frontend I use to DOSBox.

>Where do you live and what do you do for a living?

I live in Enschede, Holland. I am currently working on my master's thesis in computer science on the subject of neural networks.

>How old are you now, and when did you start programming computers?

I'm 24 now, but I still remember entering my first instruction on a friend's ZX-81 when I was 8 or 9 years old. It was, err... 'PRINT 2+2'.

>What are some of the computers you have used?

I learned BASIC on a TRS-80. My first home computer was a ZX-81, on which I soon learned to program assembler, thanks to the user's manual in which the instruction set is included right next to the ASCII table. After that I got a C-64, then a Vic-2O, and later an Amiga 1000. I bought a Vic-2O even though we had a C-64 because me and my brother were always bickering over whose turn it was to play with the computer. Also, The Vic-2O seemed like a great machine to write BASIC games on (which it is!), because I still used BASIC a lot. I learned to write proper assembler on my Amiga, and it is for this machine that I wrote my biggest assembler projects, including some unpublished games and a Kickstart operating system with built-in assembler and editor which a friend an I programmed on together. I got my PC last, including some upgrades which I borrowed, stole and begged together (in that order).

>What makes the VIC-20 computer so special?

I love the big characters. You don't actually have to design a lot of graphics because the resolution is so low. Even so, Vic-2O graphics tend to be very colorful. Also, one character is large enough to form a sprite. This makes character-based graphics attractive, which are fast and easy to program.

Secondly, the memory limitation actually has its advantages. For example, I often found myself getting bigger and bigger ideas about my cool, new, (and largely conceptual) program, and in the end it never got finished... With a Vic-2O this is not a problem: a program is finished when the memory runs out. This helps keep programs small and to-the-point.

>How was the VIC marketed in your area, and was it well received?

Well, about all I can remember is that they usually had one in computer shops. Like the mischievous little boy I was, I used to anger the shop attendants by cluttering the screen with funny characters by entering some strategic Pokes. They usually thought I had crashed the computer. I hope that didn't affect sales too much...

>How would you like to see the VIC-20 remembered?

The Vic-2O is an ideal machine for the kind of games I like. Even though the Vic-20 is no longer being produced, I would like to see it live on as a virtual (games) machine. As virtual machines go, it has a number of advantages: it doesn't cost too much processing power to emulate, the already existing software base makes testing easier and writing emulators more attractive, and there is a 'real thing' which has the final say if any compatibility problems occur.

>What were some of the unique challenges to programming PCVIC?

One thing was getting the emulation fast enough to run on my (former) 386SX-20. It was a real challenge, because I really didn't know whether it was possible. Even though I've been thinking long and hard before I started coding the 6502 engine, it took a couple of rewrites before I got it running at 100% speed.

Getting the odd screen width to fit was also a problem. I was lucky to have stumbled upon the 'clock switch' trick that gave me just that little extra screen width without having to violate standard VGA frequencies.

Thirdly, working out the missing parts of the hardware specifications involved much trying and disassembling programs. Actually, it was very educative looking at other people's code. I've learned several new 6502 optimization tricks.

>Why do you offer PCVIC as "freeware" instead of charging a fee?

I am fond of the good old Vic-20 and its games, and to honor them I offer this emulator for free so everyone will have free access to them.

>What kind of feedback have you received concerning the emulator?

It's been very positive. Some people just mailed to say they liked the program. Several people even offered help and sent software.

>Has any of the e-mail you've received surprised you?

I'm sort of surprised I didn't receive any nasty mail. Well, there was one thing that kind of upset me: I received several spam mails advertising for, guess what, a mail spammer! There appeared to be a bug in their own spammer tough, because each time I got two identical copies of the message, anyway I was not amused.

>Do you have any clue as to how many people may be using the emulator?

Honestly, no.

>What is the future of PCVIC, and how much longer will you work on it?

I suppose I will work on it as long as I use it myself. I try to include any future plans in the documentation and I keep any suggestions I have received in a log file.

>How would you like to see PCVIC used and remembered?

I would like to see new games developed for the machine. I wish to add a debugging environment and documentation to the emulator to facilitate using the PC as a cross-development tool.

My software is also more or less a statement in programming style just to show that it is not necessary for programs to be big and slow to achieve something. It's a reaction to the seeming indifference with which some of the recent commercial software I've seen throws away resources. Users shouldn't really need to buy faster computers just because software houses are more occupied with marketing than with producing quality software. A program is programmed once, but has to be used many times: sloppy software just seems to indicate that the software house doesn't expect its own software to have a long life, or is not taking its users seriously.

-Boris

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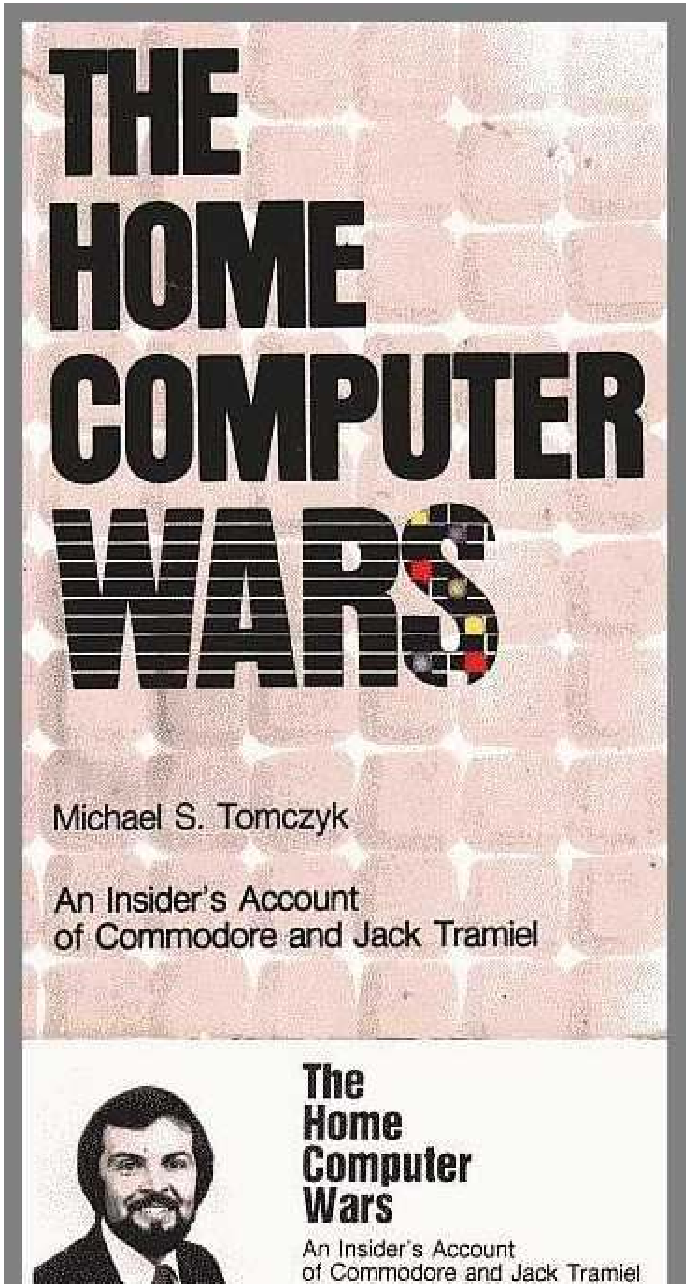
Michael Tomczyk Remembers the VIC-20

- from an interview conducted by Rick Melick on December 17, 1996



>Describe you position at Commodore and your role in the VIC-20?

I joined Commodore in 1980 as assistant to the president, founder Jack Tramiel. I had two business cards. One said "assistant to the president" and the other said "market strategist." I wore both hats...but the title I quickly came to be known by was "VIC Czar" (named after the "energy czar" in Washington, D.C.). Later, I was in charge of international product marketing.

It was a strange and terrific experience. When he hired me, Jack said my job was not to assist him, but rather to study his tough-minded business philosophy, which he called the "religion." He let me wander in and out of his office, listen to him making business calls, and generally study and absorb his management style. I had to learn fast.

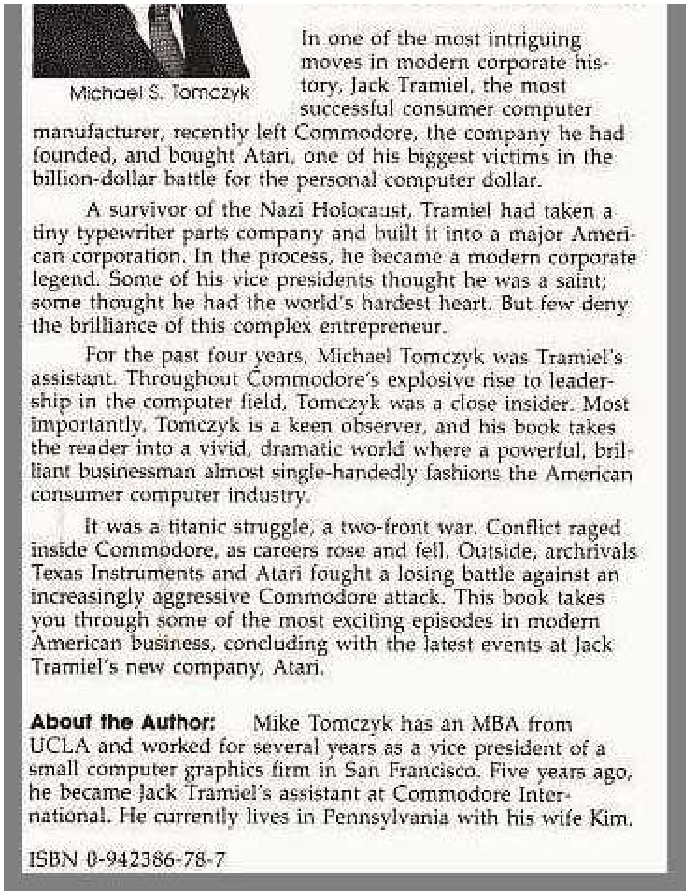
My first day with the company, I attended an international meeting in London where Jack said he wanted to introduce a $300 color computer. Of the 2O-plus executives there, only a few supported the concept: Kit Spencer the general manager in the U.K., Tony Tokai, the Japanese general manager, Jack, and me. Everyone else, including Chuck Peddle who invented the first Commodore PET computer, were opposed to the idea, in favor of a larger machine they called the "Toy."

I wrote a 3O page memo to Jack detailing everything I could think of that needed to be done with the VIC-20. Instead of a cover page, I just put a giant "happy face" caricature of myself on the cover, and tossed it on Jack's desk, saying, "Make sure whoever does the VIC reads this."

The next day Jack tossed it back to me and said, "make sure all of this gets done." And that was that. Within a week, I was being called the VIC Czar. I went to Japan to look at competitive machines that were already being demonstrated there, and stole a few ideas from some Japanese personal computers.

I had a pretty good concept for what the VIC needed to be, a truly "user friendly" computer with a full typewriter style keyboard, expandable memory, cartridge port, programmable function keys and so on. A lot of work was done by our Japanese engineering group, working long distance with our California engineers, and the semiconductor engineers at

MOS technology in Valley Forge.



Michael S. Tomczyk

In one of the most intriguing moves in modern corporate history, Jack Tramiel, the most successful consumer computer manufacturer, recently left Commodore, the company he had founded, and bought Atari, one of his biggest victims in the billion-dollar battle for the personal computer dollar.

A survivor of the Nazi Holocaust, Tramiel had taken a tiny typewriter parts company and built it into a major American corporation. In the process, he became a modern corporate legend. Some of his vice presidents thought he was a saint; some thought he had the world's hardest heart. But few deny the brilliance of this complex entrepreneur.

For the past four years, Michael Tomczyk was Tramiel's assistant. Throughout Commodore's explosive rise to leadership in the computer field, Tomczyk was a close insider. Most importantly, Tomczyk is a keen observer, and his book takes the reader into a vivid, dramatic world where a powerful, brilliant businessman almost single-handedly fashions the American consumer computer industry.

It was a titanic struggle, a two-front war. Conflict raged inside Commodore, as careers rose and fell. Outside, archrivals Texas Instruments and Atari fought a losing battle against an increasingly aggressive Commodore attack. This book takes you through some of the most exciting episodes in modern American business, concluding with the latest events at Jack Tramiel's new company, Atari.

About the Author: Mike Tomczyk has an MBA from UCLA and worked for several years as a vice president of a small computer graphics firm in San Francisco. Five years ago, he became Jack Tramiel's assistant at Commodore International. He currently lives in Pennsylvania with his wife Kim.

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The VIC was introduced at Seibu Department Store in Japan at a small computer show. It was called the VIC-1001 in Japan, because the movie 2001: A Space Odyssey was popular and apparently 1001 is more "friendly" in Japan than 20. That introduction had a lot of unintended but excellent consequences, including causing the Japanese to stop their planned introduction of some really good personal computers in the $600 price range (the NEC PC was the best, I think). Their delay gave us time to launch the VIC in the U.S., and by the time they were ready to compete with the VIC, we tromped them with the Commodore 64.

The VIC went on to become the first micro-computer to sell 1 million units and I'm very proud of that accomplishment, which is a credit to the entire team that worked on it. (More of the story is told in my 1986 book, "The Home Computer Wars".)

>Describe the corporate climate and your work environment at Commodore?

The corporate climate was based on Jack's personal management style, which he called, "the religion." Meetings were often loud and we came to call them, "Jack attacks" because of our leader's pugnacious style. He did a fair amount of shouting, challenging and table pounding. He was most definitely the Patton of the computer industry, but treated very unfairly in the press. Jack was scrupulously fair, and that level of fairness is often mistaken for ruthlessness. He might hire a new vice president , they would agree on a six month goal and the V.P. would be told if he didn't achieve it he would be asked to leave. Six months later, Jack would call a meeting, and if the executive really missed the goal, Jack would "fire" him---but was that a "firing" or doing what was agreed? Incidentally, I know one person who was fired when his entire group was shut down, but he marched to Jack's office and refused to leave, saying "you can't fire me, I refuse to leave" and Jack kept him on.

Commodore was run mostly by an infrastructure, not an organization chart. Many Commodore insiders had no titles, but exercised more power and influence than senior vice presidents, and the new vice presidents who came into the company from other industries were usually shocked by that, and seldom lasted longer than six months because they never learned to deal with the informal infrastructure.

A lot of people thought Jack was too tough but it was like working for Patton. It's tough, that's true, but you know you're going to win, and that makes it worth the aggravation. When Jack left the company in 1984 over a dispute with the company chairman, Irving Gould, more than 35 top execs and engineers left the company, which essentially gutted the company of its infrastructure, and most of its talent...leading indirectly to Commodore's eventual failure.

>How did your work on the Commodore VIC-20 help you with your career today? What are you doing these days?

I am currently the Managing Director of the Emerging Technologies Management Research Program at the Wharton School. We study best practices and competitive strategies for companies in industries that are being created or transformed by emerging technologies, such as the Internet, Gene Therapy, etc. I also do some consulting for large corporations in the area of electronic commerce, and serve on the board of directors of a few companies, including Group Cortex, an Internet development firm in Philadelphia. A VIC-20 is displayed in a case on the wall of my office.

>Does the VIC-20 hold a special place for you, or was it no more/less significant than the machine on your desk right now?

The VIC-20 is still on my wall, in a place of honor. It helped to define my career, and I'm totally surprised by how many people still recall it, and remember that I played a role in its success.

>The VIC-20 Programmer's Reference Guide was an excellent publication. How long did it take to compose, and what were some of the unique challenges in writing it?

The reference guide was a team effort, driven by the fact that no one had done a decent reference guide for computers that were out there. I had trouble finding information, so I insisted that we do a true reference guide, with a really open approach to sharing information so programmers could embrace the machine and develop software and accessories to support sales. The guide was one of the best selling tools we developed. Andy Finkel and the other authors worked diligently, often all night and on weekends, and we all treated this as a labor of love. We started with a group of four or five people, and within one year this grew to a staff of approximately 40 or 50 people. By the way, the VIC modem was one of the first attempts to introduce affordable telecomputing--it was the first modem priced under $100 and was developed by a team of outside engineers I recruited from outside the company. They did a great job on the design, and the key was making it into a plug-in cartridge, made possible by the fact that the Vic has a built-in RS232 port. A bit of trivia: In our first year, the Commodore Information Network was the most used service on Compuserve.

POWER PLAY COMPUTING

>What do you think of the VIC-20 emulators), and the effort to preserve the history of the VIC-20 for future generations of computer enthusiasts?

Impressive, interesting, worthwhile. It shouldn't be lost. The VIC jump started the home computer revolution. Millions of people will attest to that, and I believe this product helped the personal computer become accepted as an affordable, friendly, and user friendly device.

>Michael, let's get the facts once and for all: Was the VIC-20 name a result of rounding the total amount of memory in the system or a result of rounding the number of screen columns?

The name VIC comes from "video Interface Chip" which made the computer possible. At one point, I called the computer "The Commodore Spirit" but it turned out that "spirit" in Japan means "ghoul from hell" or something like that, so we went back to VIC. But VIC sounded like a truck driver, so I insisted on attaching a number. I picked "20" and when Jack asked, "Why 20?" I replied, "because it's a friendly number and this has to be a friendly computer." He agreed. The number 20 has no relation to any technical feature...just my idea of a friendly sounding number. That sounds a bit bizarre, looking back on it, but we did a lot of things by instinct in those days and our research at Wharton suggests that instinct is still a key driving factor in the development of "out of the box" technologies like the VIC.

(By the way, the Commodore PET was named after the "PET Rock" by Jack and Chuck Peddle. After they named it, they had to find a reason for calling it that, so Chuck combed the dictionary and came up with "Personal Electronic Transactor.")

Thank you for inviting me to participate in your highly worthwhile efforts to document, archive, and preserve the VIC-20...a true icon in computer history.

Best regards,

Michael Tomczyk

More ->

The Story of the VIC

Michael S. Tomczyk
Product Marketing Manager, Commodore International
COMPUTE!'s First Book of VIC, 1982

Commodore projects 1982 sales of over ½ million VICs in the US alone. This compares to a total of 800,000 computers of all types sold last year in the US. Michael S. Tomczyk, one of the VIC's founding fathers, describes the beginnings and the history of this popular computer.

The VIC-20 was first announced by Jack Tramiel - Commodore's founder and now Vice Chairman - at an international manager's meeting in London in April 1980. There, at a quaint inn on the outskirts of the city, the representatives of half a dozen "Commodore countries" gathered to discuss problems and exchange ideas.

We Will Become The Japanese -

On the second day Of the meeting, Tramiel surprised everyone by announcing his intention to develop and market a "$300 personal computer's He reminded the group that Commodore was a pioneer In low-priced pocket calculators and had introduced the first self- contained personal computer - the PET - in 1976. Now it was time to introduce a low-priced color computer.

A debate ensued, with several groups talking simultaneously. Some felt it wasn't time for a computer priced that low, Others felt the new computer might undercut sales Of the PFT, and still others questioned whether it was economically and technologically feasible.

Finally, about twenty minutes later, Tramiel stood up, pounded his fist once on the table, and said in his deep booming voice, "The Japanese are coming, so we will become the Japanese." The room fell silent as he explained that several Japanese computer companies (known collectively as "Japan, Inc.") were already poised to enter the U S market. Japanese companies had already captured the television, radio, and small car markets, and personal computers were next on their list.

He said we have to compete with ourselves by making computers that do more and cost less, and that meant breaking the $300 price barrier.

The First $300 Color Computer -

We knew there was price resistance at the $300 price point: but how could Commodore make at $300 color computer profitably? Commodore has one terrific advantage - vertical integration, which means we design and manufacture our entire product. Most important, it means we design and make our own computer chips, and computer chips are the heart of any computer.

Many people still don't know that MOS Technology (a Commodore subsidiary) developed the 6502 Microprocessor, the key computer chip used in Apple, Atari, and several other popular computers, in addition to Commodore. MOS also designed the Video Interface Chip, one of the key chips used in the VIC-20 computer.

When it was suggested that we create a computer based on the VIC chip, some of the engineers resisted the idea, claiming the chip was too "limited." They scoffed at the idea of a VIC chip computer and complained that the VIC chip allowed only 22 columns on the screen compared to PET'S 40 columns.

Finally, two groups of engineers on the East and West coasts wound up in a race to build a prototype computer using the VIC chip. At MOS in Pennsylvania, the designer of the VIC chip spent several sleepless nights building his prototype. He put the computer in an old Commodore desktop calculator housing and used a keyboard from one of the original PET computers. The original keyboard was a calculator-style keyboard with red metallic keys. In a few days, the prototype was done,

Introducing The User-Friendly VIC –

The first prototypes were taken to the National Computer Convention in Chicago in June 1980, but the new computers weren't put on display. They were set up at our booth in ' room enclosed by tinted Plexiglas walls. Only a few people were allowed inside to see the new computer, but lots of noses pressed against the windows as passers-by peered in to get a glimpse of our new "secret" computer.

The next job – my job - was to put together the marketing program to launch the product in the United States. We began with a very simple premise: computers are not perceived as being "friendly, " so we have to make the VIC-20 as "user friendly" as possible. A lot of people chuckled because I waved the "user friendly" banner so forcefully. Some people even resisted the idea when I dubbed the VIC "The Friendly Computer" and trademarked the phrase. But, in the end, "user friendliness" turned out to be the VIC'S most important feature.

The first place I used the phrase "user friendly" was in an engineering meeting in Santa Clara, California. I began the meeting by writing, in huge block letters on a grease board, the words, “user friendly.” I then announced quite seriously, "Any thing that doesn't meet this criterion will not be discussed in this room. It worked. Every time the discussion strayed, or someone suggested adding some complicated feature, I simply pointed at the board and the discussion fell right into place. It seemed that everyone knew what "user friendly" meant.

Commodore engineers all picked up on the phrase and built some very friendly computing features into the VIC-2O, like two graphic symbols on each key. I insisted that we put color abbreviations on the color control keys (you can blame me for using CYAN instead of LT. BLUE), and included an L-shaped pound sign for our English friends. In Autumn 1980, I took the "user friendly" banner to Japan, where we held engineering consultations and finalized the product.

VIC...VICKIE...VIXEN...

One of the hardest challenges was giving the VIC-20 its name. In the early days, the VIC-20 really didn't have a name.

Most of the engineers liked the name Vixen. I even doodled some sketches using a cute little fox as a logo. The name Vickie was mentioned, too, but never seriously considered. Over the next few months we considered quite a long list of names which might be acceptable internationally. We all spent long hours thumbing through our thesauri searching for an obscure but clever name like Atari or a cute name like Apple.

Finally, we decided to name the computer after the Video Interface Chip - VIC - which became Video Interface Computer. VIC sounded naked by itself, however, so we decided to add a number.

But the only meaningful number was VIC-22 (based on its 22 columns). For some reason, the number 22 didn't seem very friendly, so we settled on the name VIC-20 because the number 20 sounded "friendlier." Ironically, as a side note, we originally vetoed the name Vixen because it had undesirable connotations in German, but VIC later turned out to mean something even worse. As a result, the German model was called VC-2O and translated as "Volks Computer" (the "People's Computer"). For a while the name "Volks Computer" was so well-liked that we considered using it worldwide, but the only U.S. tie-in was Volkswagen, and Volkswagens were no longer being made. Except for Germany (VC-2O) and Japan (VIC-1001), we stuck with VIC-20. In the end, the short, snappy name turned out to be easy to remember, convenient for magazine headlines, and very "user friendly."

The Japanese Didn't Come –

We first introduced the VIC not in the United States but in Japan, where the VIC's potential competition was already brewing. It was sort of like carrying coals to Newcastle, but we knew if the VIC succeeded in the Japanese market it would succeed in the rest of the world.

Our Japanese VIC, called the VIC-I 001, included uppercase English letters, PET graphics, and Japanese characters. It was introduced in September 1980 at a major computer exhibit at Seibu Department Store in downtown Tokyo. Over 100 orders were taken the first day.

When we introduced the VIC-20 in the U.S., in the spring of 1981, we still expected some low-priced Japanese computers to hit our market by Christmas. Incredibly, that didn't happen. The Japanese didn't come! Instead, most Japanese companies ignored the low end of the market and entered the U.S. with higher priced computers in the $2000-6000 price range. As a result, throughout 1981 and most of l982, the Commodore VIC-20 was the first and only full-featured color computer priced under $300.

A Computer Priced Liken Video Game –

Personal computers had been available since the mid-1970's, but by 1980 they still hadn't become a mass market item. Three major obstacles stood in the way: 1) computers were too expensive, 2) computers weren't very "friendly" and 3) nobody knew what to do with them. The long-awaited "Home Computer Revolution" had not caught fire, and the popular use of computers was limited to hobbyists, engineers, and classrooms.

Our advertising started out comparing the VIC-20 to our closest competition, but we soon realized that there wasn’t any competition at our price point. And those higher priced computers weren't selling very well anyway, so why compare the VIC-2O to them? Why not compare the VIC-2O to a product that was selling well, like video game machines?

After all, the VIC-20 was selling for the same price as a video game machine, and VIC software includes cartridge games as were as well as practical programs. In other words, why buy a video game when you can buy a full-fledged computer for the same price? That message became our advertising slogan.

Actor William Shatner of "Star Trek" was chosen as our spokes-person, and in the first months of 1982 we kicked off the largest advertising campaign in Commodore's history. Shatner introduced the VIC as the "Wonder Computer Of the 80s," adding, "it plays great space games, too.”

Commodore also negotiated a long-term arrangement for conversion of Bally Midway coin-operated games to cartridge - including best-sellers like Gorf, and Omega Race. Sargon II Chess gave us one of the best chess games in personal computing, and five Scott Adams Adventure games gave us possibly the best assortment of adventure games available from a computer manufacturer.

We also introduced a low-priced six-pack of games on cassette tape, with names like Blue Meanies From Outer Space. These games persuaded a lot of people to buy the VIC-20. The next step was to take those VIC-20 owners from video games to other computing. To do that, we had to cross the second obstacle to mass market computing and make computing "friendly."

Friendly Computing In Action –

Owning a personal computer used to mean you had to know how to program in BASIC. But, user friendliness in marketing means giving the customer an item that requires little or no special expertise to use, apply or enjoy. One way to do this is to include a really nice instruction book that lets you have fun and do interesting things without expensive peripherals or packaged software. You don't have to be an auto mechanic to drive a car, so why should you have to be a programmer to use a computer?

The user friendly manual we wrote for the VIC-20 doesn't even mention the word "programming" until the last chapter. Our manual teaches you how to "compute," which we interpret as meaning "to have fun." So we talk about cartoon animation, sound and music, color graphics, and other topics. We also wrote the book so you can turn to any chapter and start computing from that point, with little or no experience. If you want to write computer music you turn to the music chapter and start there. If you want to work with color and graphics, you start with that chapter.

What we didn't say is that if you work through the book, you'll learn how to program in BASIC, by osmosis, since most of our examples included a very subtle introduction to programming. It was a sneaky - but helpful - way to ease new computer owners into the fundamentals of computer programming, and it meant new VIC owners had an excellent head start if they decided they wanted to learn computer programming. We also wrote a technical manual for programmers, called the VIC-20 Programmers Reference Guide. This manual set the standard for future Commodore programmer's reference guides.

What Do You Do With A computer?

The last obstacle to selling personal computers was that nobody knew what to do with them. This was the toughest challenge of all.

The key point in using a computer is that if you can find one useful, interesting, or practical application, you’ve justified its use. However, everyone has his/her own special need for a computer, and that's what makes this challenge so difficult.

One of the answers is to provide a useful selection of software. So, in addition to games, we introduced a Home Calculation six-pack and a Personal Finance program, and we developed some unique educational programs like the Home Babysitter cartridge, which contains three separate skill-building programs for pre-school children.

We've also found that VIC owners are coming up with their own unique applications. A ninth grader wrote a program that keeps track of his paper route. A computer artist found a way to create new designs. A container executive uses the VIC to calculate complicated paper trim percentages.

After owning his VIC for two months, one VIC owner wrote a program and sold it to Commodore. And he'd never used a computer before.

A surprising number of people are taking up computing as a hobby, but they aren't really computer hobbyists, as hobbyists were defined a few years ago. These hobbyists aren't as technically inclined as those first hobbyists were in the 197Os. And they don't have to be technicians.

Remember the "chemistry set craze" in the 1950’s and 60’s? Nobody expected to invent medical cures or split atoms with their chemistry set, but they sure had a lot of fun with them The same holds true for the VIC-20, except that a lot of people are finding that their experiments often lead to some practical or creative applications they can use in their home, school, or business.

Story of The VICmodem –

The device which lets you connect your computer to the telephone is called a mode, but modems cost as much as $400. In 1981 we wanted to develop a "VICmodem" which could retail for about $100, but no one wanted to build a modem we could sell for that price. Everyone wanted to "protect" their price levels, or felt it wasn't "time" for a hundred dollar modem, or that it was technically impossible.

Finally, a small company that made industrial modems for food processing plants offered to help design our modem. After several tough sessions we came up with a modem on a cartridge which plugs directly into the VIC-20 and connects to any modular telephone handset. A Nonmodular telephone adapter for connecting the modem into the wall phone socket was also designed for those who didn't own modular telephones, and for users in Canada.

The final VICmodem includes a free subscription to and complimentary hour on CompuServe’s information service (including "Commodore Information Network,” a VICterm terminal program on tape) and several other special offers, all for only $ 109.95. VICmodem went on sale only six months from the day the original idea popped into our heads.

VIC-20 As Home Appliance –

Computers had a hard time being accepted as retail home appliances because of the chicken and the egg phenomenon. For example, the VIC-2O couldn't be accepted as a home appliance until a housewife or student could walk into a department store and buy the VIC-20 off the shelf, like a radio or an alarm clock. On the other hand, department stores weren't ready to put computers on their shelves until the general public was ready to come into their stores to buy computers off the shelf.

Commodore put together a consumer products team which went after the retail market and persuaded large department stores, toy stores, audio-video stores, and even discount chains to carry the VIC in large quantities.

We provided regional training for store personnel, designed an in store display fixture containing a full selection of VIC products, and put together co-operative advertising and other merchandising programs which appealed to mass merchandising chains. The result is that the VIC-20 is now being sold in places like Macy's, Toys R Us, and even K-mart, and is included on the back cover and inside Montgomery Ward's catalog.

What's next? There are some exciting surprises in vice future. And we will continue to produce new and better software for the VIC-20, including more “practical” software which most serious computerists will appreciate.

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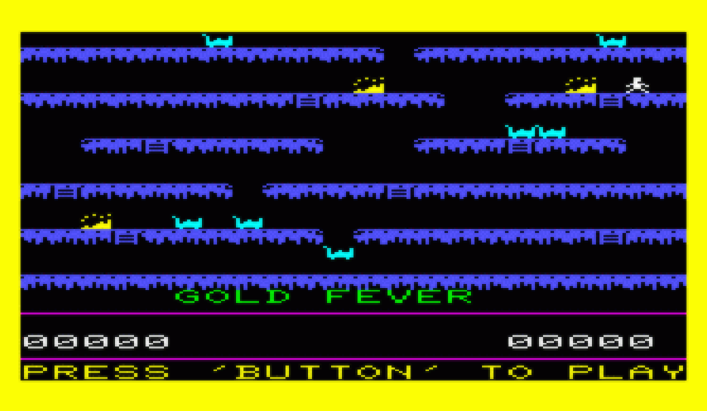
Corey Ostman Remembers the VIC-20

- from an interview conducted by Rick Melick on November 18, 1996



>In his interview, Jimmy Huey described you to be (at the time) a 16 year-old whiz kid. Perhaps you could describe for us your role at Interesting Software, and some of the computer experiences that led up to it.

All of us met through our use of the Ohio Scientific personal computer. I had both an OSI C1P and an OSI C4P. Jim Lin, Hal Lafferty, Jimmy Huey, myself and my mom were all involved in Interesting Software. It was run out of my living room as a mail order business, specializing in OSI, VIC-20 and CBM-64 software. For the most part, the products were games, but I also wrote an operating system for the CBM-64 that gave the machine many of the same features as the Apple II DOS.

I became involved with computers in the 8th grade. We had an Apple II, a couple of programmable HP calculators, and the ability to send punch cards to a mainframe that would compile and run FORTAN programs. At that time, I couldn't afford an Apple II, but I could afford an OSI C1P (which was around $700 at the time). I first learned FORT , then BASIC, then 6502 assembly code. I was hooked.

>I had an opportunity to speak to your wife in an earlier e-mail message, and she said that you two had met on the Internet and recently got married. What else have you been up to since Interesting Software?

Since Interesting Software, I graduated from UC Irvine [with a mechanical engineering degree -- computer science would have been too boring ;-)]. I worked for Hughes Aircraft in the flight simulators division for five years and then moved to SYSECA Inc. where I am a Senior Scientist, working on advanced prototyping of software technologies.

>How did your work at Interesting Software help you in your career today?

The knowledge of how to start a company from scratch has been useful in assisting my wife in starting her own company. Beyond that, of course, I've been involved with software ever since.

>In some of the games published by TRONIX appears the word "Dragonfly" in the title screen. Would you describe what this means?

My best recollection is that "Dragonfly" refers to programs authored by Interesting Software folks. I believe that Jimmy Huey's games and my own probably have "Dragonfly" on them. Could you verify this and let me know? I dug through some old sales literature, but couldn't confirm this hypothesis.

>Does the VIC-20 hold a special place for you, or is it no more/less significant than the computer you have on your desk right now?

The VIC-20 does hold a special place for me because it was the first platform for which I published commercial software. The machine had a lot of elegant things going for it, both from a hardware architecture as well as an underlying software base.

>What do you think of the VIC-20 emulators, and the effort to preserve the memory of the VIC-20 for future generations of historical computer enthusiasts?

The emulators are quite cool. I've always been intrigued with emulators ever since one of my colleagues wrote an Apple II emulator for the SGI Indy. Of course, it ran the software (in emulation) about 10 times faster than the original 1 MHz 6502!

- Corey

More ->

Andy Finkel Remembers the VIC-20

- from an interview conducted by Rick Melick on November 12, 1996

REVIEW: Alan Hewson covered this game in one of his excellent "Many faces of..." articles where he rightly gave credit where credit is due. Perhaps some may have been surprised to see a Vic 20 game win a silver medal, but one play of the Vic version of Omega Race and you very quickly realize why it won. To put it simply, this game is absolutely brilliant. The graphics, sound and most importantly, the playability arguably make this the best game to appear on the Vic 20. Omega Race is a shoot-em-up, not a racing game as the name may suggest. You are in a rectangular arena where you have to eliminate a number of enemy drones and mines before moving on to the next level. Your ship (which looks like the ship from Asteroids) can thrust about the arena, rebounding off the walls. There is a lot of inertia, so you must be careful and keep your ship under control. If you are not quick to destroy all the enemy drones, one of the drones begins to rocket around the arena, firing its missiles everywhere. There are loads of options in the game. You can play with keys, joystick or paddle. You can change the amount of ships you start with. And you can change the background colours and the colours of the ships. Overall, this is a game that really shows what the Vic 20 is capable of. My Score - 10/10. -Tonks(RT#70, 6/2003)

>Describe you position at Commodore and your role in the VIC-20?

I joined Commodore in 1980 or so, as part of the VIC-20 launch team ... so I actually worked at Commodore US in the marketing department. I was one of the two programmers on the team. In the beginning I was one of the people responsible for writing the demos, fixing up the Japanese cartridge software so we could sell them in the US, for testing the hardware and software from Engineering, for working on the manuals, for providing tech support for the TV commercials, talking to developers, and so on.

>Describe the corporate climate at and your work environment at Commodore?

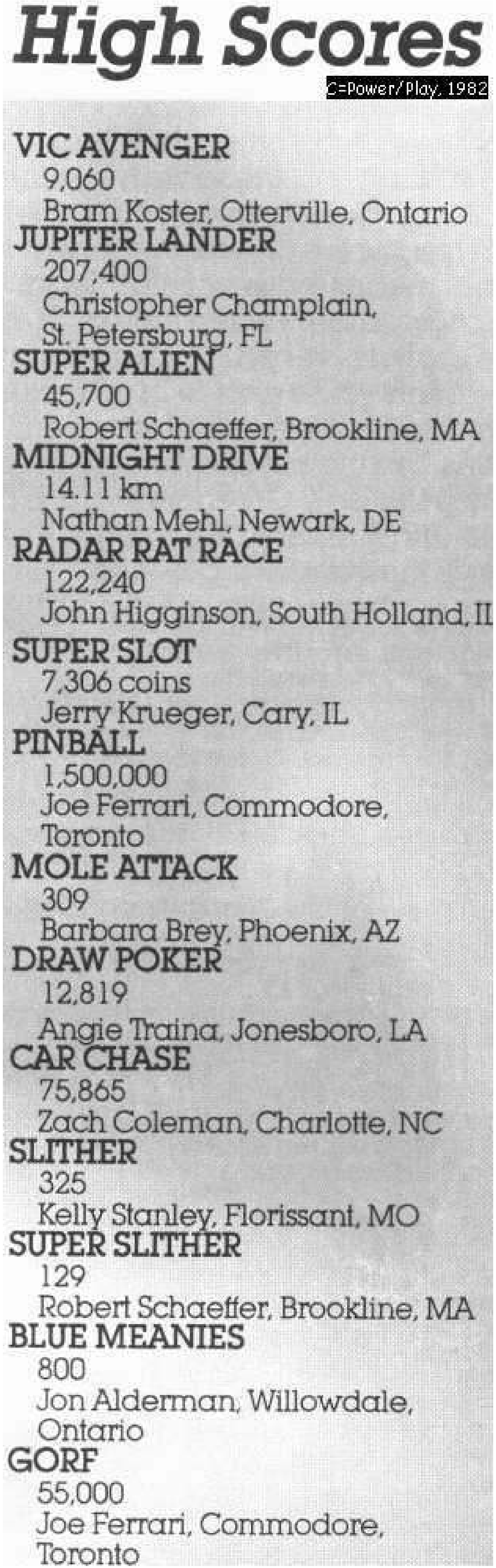
In the early days, we were all packed into a single open room at Commodore US headquarters. In the next row was customer support, so it was pretty noisy. Commodore had just moved its HQ from the west coast to the east coast, so things were somewhat disorganized.

Commodore was at that time, an organization where, within pretty broad departmental limits, you could define your own job. Which is one of the reasons I ended up doing so many different kinds of things ... Mike wanted his group to handle all aspects of the VIC-20. We were a 'commando group' within Commodore US.

After the VIC-20, I switched to the Commodore-64 launch team, where I did much the same kind of thing. Then, when Commodore decided to get into the game software business in a serious way, I helped form the game group, where we did some games for the C64.

>How did your work on the Commodore VIC-20 help you with your career today?

I got familiar with a lot of different parts of the production and

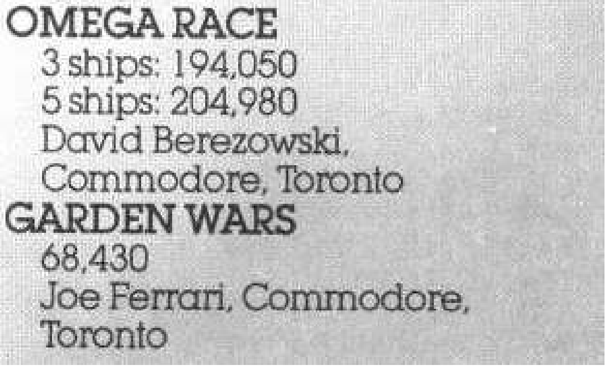


High Scores

C=Power/Play, 1982

VIC AVENGER	9,060	Bram Koster, Otterville, Ontario
JUPITER LANDER	207,400	Christopher Champlain, St. Petersburg, FL
SUPER ALIEN	45,700	Robert Schaeffer, Brookline, MA
MIDNIGHT DRIVE	14.11 km	Nathan Mehl, Newark, DE
RADAR RAT RACE	122,240	John Higginson, South Holland, Il
SUPER SLOT	7,306 coins	Jerry Krueger, Cary, IL
PINBALL	1,500,000	Joe Ferrari, Commodore, Toronto
MOLE ATTACK	309	Barbara Brey, Phoenix, AZ
DRAW POKER	12,819	Angie Traina, Jonesboro, LA
CAR CHASE	75,865	Zach Coleman, Charlotte, NC
SLITHER	325	Kelly Stanley, Florissant, MO
SUPER SLITHER	129	Robert Schaeffer, Brookline, MA
BLUE MEANIES	800	Jon Alderman, Willowdale, Ontario
GORF	55,000	Joe Ferrari, Commodore, Toronto

engineering processes.



OMEGA RACE
3 ships: 194,050
5 ships: 204,980
David Berezowski,
Commodore, Toronto
GARDEN WARS
68,430
Joe Ferrari, Commodore,
Toronto

>What are you doing these days?

I'm doing Amiga operating system work at the moment.

>Does the VIC-20 hold a special place for you, or was it no more/less significant than the machine on your desk right now?

Well, on my desk is an Amiga, which is as significant to me as the VIC-20 ... I was involved with the creation of both machines. But your point is valid; either machine means more to me than my PC or Unix box, for instance.

>The VIC-20 Programmer's Reference Guide was an excellent publication. How long did it take to compose, and what were some of the unique challenges in writing it?

It took a couple of months to write. There's a general rule in low level programming for a computer... the longer you do it, the more you learn about that computer. When we wrote the PRG, not much more than the chip specs were known (by anyone) about the VIC-20. So it was sort of a combined learning experience/writing experience. I would have liked to have had the opportunity to rewrite the book a year later, after a lot more VIC-20 tricks had been discovered.

>What do you think of the VIC-20 emulators and the effort to preserve the history of the VIC-20 for future generations of computer enthusiasts?

I like the concept. A lot of the old games are still a lot of fun to play, and not everyone kept their VIC-20 around like I did.

>What were some of the challenges to programming GORF? Did programmers often work in teams at Commodore?

We worked in teams of 1 or 2 :-) Commodore always liked to run lean, so team size was kept small. Gorf was fairly straightforward; I worked on it after Omega Race, so reused a lot of the code and concepts.

> Did Commodore have any other contracts to license titles from Bally Midway for games that never made production?

Sure; some of the later Bally games didn't hold up to our standards of play, so we passed on them. For instance, there was one called Domino Man that was basically an exercise in frustration. You tried to set up a line of dominoes, and things wandered through trying to knock them over. Not much fun, so we didn't take that one.

> What is the story behind Wizard of War, and why was it not released for the VIC-20?

I don't remember there being all that much of a story; it was kind of late, and Commodore was involved in the C64 full time by then, so it just fell by the wayside.

> Who programmed Omega Race?

I did. Eric Cotton was my junior programmer assistant on the project. There's a secret key sequence to get the hidden credits. It's been awhile, but I think it was...

While the title sequences are displaying, hold down the Control, Shift, and Commodore keys, and press the RETURN key. The game makes a sound, and you'll get a couple extra pages of title screen.

It was a fun game to do. At 8K of binary (max) I could remember the entire source, so making changes was easy.

> I also liked VIC Biorhythms... Were there any other software titles you created? What about prototypes?

Its been awhile, so I've probably forgotten a lot of them, but ...

Well, on the VIC-20, I did some other tape programs, like the Loan-Mortgage calculator, and Car Wars. Aside from Omega Race, I did the VIC-20 Music Composer, Sargon II Chess, and worked on Gorf.

I also ported misc. tools from the PET, like VICMON

On the C64 I did Lazarian, Dragon's Den, an unreleased game (Guardians of Time)

-AF

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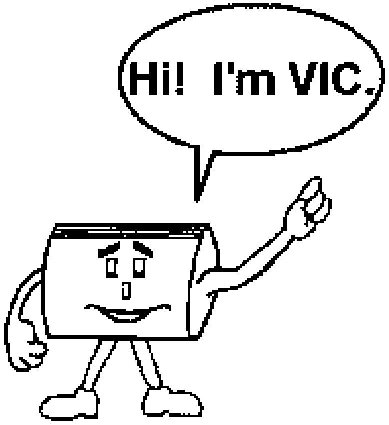
Bill Seiler Remembers the VIC-20

- from an interview conducted by Rick Melick on November 5, 1996



Yes the VIC-20. That was a strange project. It was a G-job really. *G-job* means fun projects that we (engineers at Commodore) did on our own time.

Just before the VIC-20 was born I was working at Commodore on the TOI project. TOI was to be an Apple II competitor. You know 40 columns color graphics, 6502 and all that stuff. Al Charpenter was helping me with a new chip to do the video in the TOI design. I think Al grew the TOI into the Commodore 64 chip later on.

The VIC chip was a finished working graphics chip designed by Al and friends at MOS Technology. The VIC chip was aimed at the video game market which at the time was dominated by ATARI 2600 game machines. At that time the Sinclair Z80 computer was selling like crazy for less than $100. I had some of these VIC chips for some time and decided we could do a low cost computer based on it.

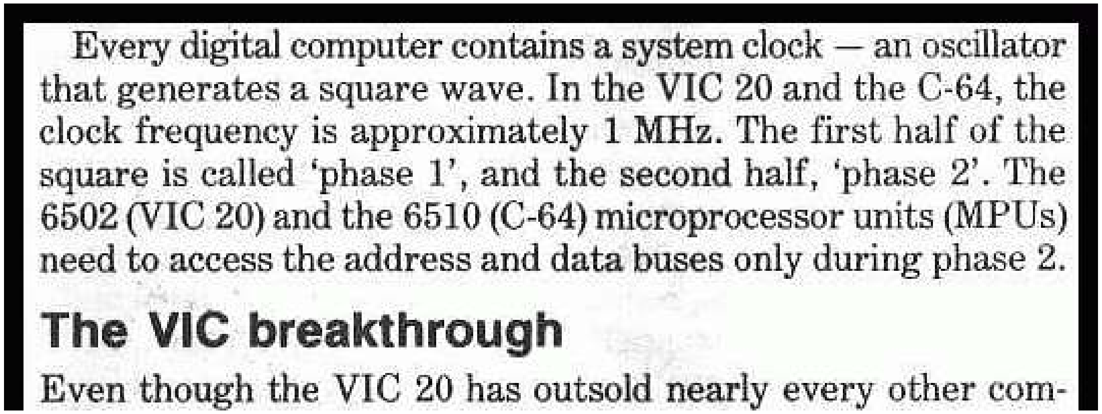
I replaced the video section of the standard PET computer with the VIC graphics chip. I sawed the PET mother board in half, removing the video section and wired in the VIC chip. with the help of John Feagans we patched the system roms for the PET to used the VIC for video.

The first real problem was how to do color. The PET already had a simple way to do character graphics, so we just extended the idea to add color characters to it.

A few months before, I had pulled one of Commodores old printing calculators from the trash. I removed the calculator guts and modified the case to take the original small PET keyboard and then modified VIC/PET mother board to fit inside. We had a rough working prototype at this time. This was not an official project yet. We were just doing it for fun. Unknown to us at the time the guys at MOS Technology had been working on a prototype of there own.

Their machine was also VIC/6502 based but had no operating system or BASIC. It was aimed more for the game market then the personal computer market. It had game cartridge slots, the small PET keyboard, and a real case.

The big CES show was coming up soon and suddenly there was a big push to get a prototype there. It was a bit of a horse race within Commodore to get their prototype to CES first. The PET group felt the machine



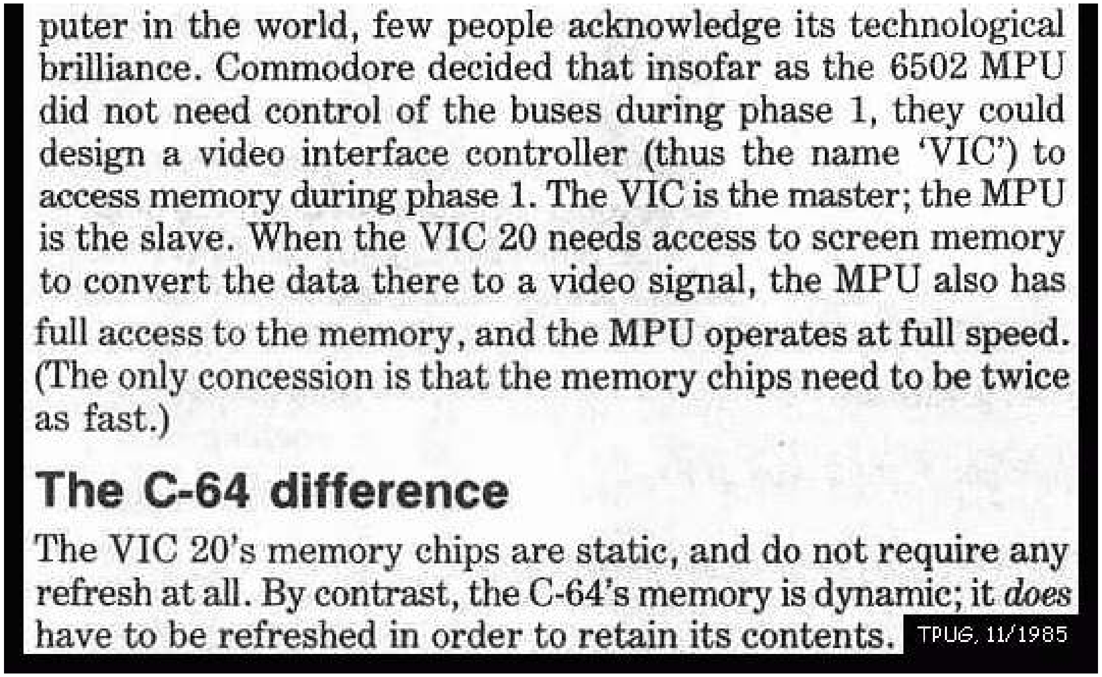
Every digital computer contains a system clock — an oscillator that generates a square wave. In the VIC 20 and the C-64, the clock frequency is approximately 1 MHz. The first half of the square is called 'phase 1', and the second half, 'phase 2'. The 6502 (VIC 20) and the 6510 (C-64) microprocessor units (MPUs) need to access the address and data buses only during phase 2.

The VIC breakthrough

Even though the VIC 20 has outsold nearly every other comshould be at the minimum a computer. It should have a language (BASIC) to write programs in, and a way to save and load programs (cassette tape).

Chuck Peddle modified his cassette tape read/write routines to operate at the new clock speed for this hybrid VIC/PET. We cleaned up the calculator case and added an external PET cassette drive. Lenard Tramiel and I modified some PET games to have color and use the smaller VIC screen size. We shipped the prototype off to CES and it came back a big hit.

Suddenly the VIC-20 was a big project at Commodore. Chuck Peddle gathered all the PET engineers together to do the design for the VIC-20 in about one month. We had wall to wall meetings to finish this design. I remember Chuck even had Bob Metcalfe come and give us a lecture on his new idea, ethernet!



puter in the world, few people acknowledge its technological brilliance. Commodore decided that insofar as the 6502 MPU did not need control of the buses during phase 1, they could design a video interface controller (thus the name 'VIC') to access memory during phase 1. The VIC is the master; the MPU is the slave. When the VIC 20 needs access to screen memory to convert the data there to a video signal, the MPU also has full access to the memory, and the MPU operates at full speed. (The only concession is that the memory chips need to be twice as fast.)

The C-64 difference

The VIC 20's memory chips are static, and do not require any refresh at all. By contrast, the C-64's memory is dynamic; it *does* have to be refreshed in order to retain its contents.

TPUG, 11/1985

We adapted the PET IEEE-488 parallel bus to the serial bus used in the VIC-20. I remember the VIC-20 had a convoluted ram address space. We were trying to make some price point so we could only put in 5K of ram. Also due to the limits in the VIC graphic chip (16K max) I had a 1K block of memory low, a 4K hole of nothing, then 4K more ram. Our prototype was shipped off to Japan where it was packaged with the larger PET keyboard you see in the final VIC-20's.

That it for now!

Bill Seiler

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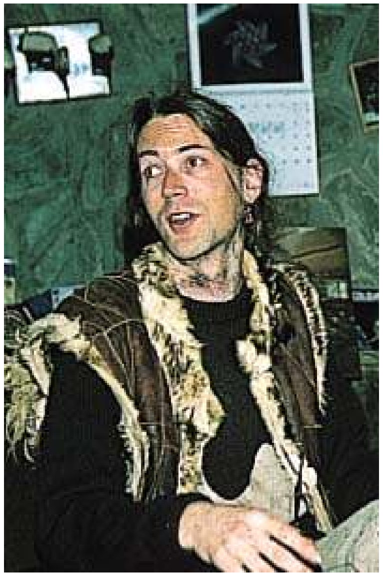
Jeff Minter Remembers the VIC-20

- from an interview conducted by Rick Melick on October 31, 1996



GRIDRUNNER REVIEW: This was the game that really convinced me that the VIC 20 was a great games machine. It was created by the legendary Jeff Minter. Gridrunner is an intense shoot-em-up. While it has some similarity with Centipede, it has enough original ideas to stand on its own right as a brilliant original game. A centipede like creature snakes its way down the screen towards you. When you shoot one of the segments it splits into two and both segments continue down the screen in opposite directions. Each level sees the centipede creature get bigger and faster, then two appear and then three. Within no time there are segments flying all over the place. Every segment that you shoot leaves behind a mine that slowly grows until it shoots out a missile straight down the screen. Bad luck if you happen to be sitting right under the mine when it releases its missile. The other things you have to watch out for are the two laser-guns that move up and down the left hand side of the screen and back and forth along the bottom. The two laser-guns periodically shoot out a long laser, laying more mines wherever their two lasers intersect. This sure is one hectic shoot-em-up, just what Jeff Minter has always excelled in. The Vic 20 is quite limited with its sound, yet Minter has created some very good and gutsy sounds. This is certainly one of the best Vic 20 games. It was released on cart and tape. My Score - 9.5/10. -Tonks(RT#70, 6/2003)

> Where did you get your ideas for games? How did you plan a game?

ohhh, *anywhere*... play mechanic was quite simple in those days, largely coz of the constraints of memory and proc speed... I used to be into the idea of introducing new styles of control that hadn't been done before - like controlling multiple shooters at once in Laserzone and Hellgate, or the Llama/force field combination in Metagalactic Llamas Battle at the Edge of Time. I was also heavily influenced by the work of Eugene Jarvis on the Williams coin-ops, and from those games got a taste for games with bags of raw *speed* and big explosions... I never got the Jarvis-style explosions down as well on the VIC as Tom Griner did, he was ace at the bitmapped stuff like in Predator... but I redeemed myself in later games (hehe... check out my way over the top explosions in T2K. When I met Eugene a couple years ago he admired *my* explosions, you can imagine how chuffed I was :-])

> How old were you when you programmed the VIC-20?

Ummm... I was 2O when I got my first VIC. Although I did get experience on a Commodore machine when I was 17 - we had an 8K Pet (with the calculator keyboard and the built in tape deck) at school that I taught myself to code 6502 on and wrote my first games on :-)

> How many hours each day did you spend programming? Where did you do your coding?

Oh, most of the day, maybe breaking off to go down the pub with my mates at night, and hang out in the games room and listen to music and play coin-op Tempest and Star Wars :-). My VIC coding started out in the living room lying on the floor in front of the family telly - Gridrunner was written in one week lying on the floor in front of that telly. Then I got a cheap portable telly, and moved into my bedroom. Once Llamasoft started to make money, I had an extension built on my parents' home that became my computer lair - it had long benches down the walls for systems, lots of power points on the walls, and a 10-foot-long mural of Llamas in the Andes :-)

Not to mention a kicking stereo, an 8-foot projection TV, and three or four coin-op arcade games :-]

> What were some of the unique challenges to programming the VIC-20? How did you

overcome them?

NO FRAGGIN' MEMORY! The only way around that was just to come up with clever designs and code 'em tight. Tom was a better Vic coder than I was, he had the bitmapped stuff down, and all those neat little proportional fonts. I just tended to stick to the char map stuff in those early daze. I was cool on the sound FX though - the FX on Laser Zone were jammin' :->... Mainly I just used to aim to try an' get a good solid playable game in the ram provided. (In fact a few years I coded up a version of Gridrunner on the Atari ST, in 3.5K, just to prove I could still do it).

In terms of being the baddest-assed technical coder on the Vic though, in my estimation, that honor goes to Tom. :->

Oh, and developing using a hex editor and a tape deck was a right caution, too. I will never forget the first time I came out to the US to assist HES, and I saw this thing called an "assembler" where you could type in *words* for the op-codes and use these label thingies! No more working out relative jumps in your head! It was a revelation!

> Does the VIC-20 hold a special place for you, or was it no more or no less significant than the computer sitting on your desk right now?

hell, of course the Vic is very special to me... my first *real* computer (I don't really count the ZX-80 or ZX-81 hehe)... and the platform that launched Llamasoft and my career in the biz. I still have my original Vic with the square keys and the big Welsh expansion rack on the back that I used for most of my early coding... it's back in the UK now, but I shall never throw it out. I learned a lot coding that machine, and some of the lessons I learned - like being able to do decent stuff in not much memory at all - still stand me in good stead to this day.

I will never forget the Vic, and there will always be a huge soft spot in my CPU for the ol' thing :-)

> Would you say that you have a Llama fetish? If so, how did that all start?

Oh, yes, most definitely! There are not many people on this earth who love Llamas with quite the passion that I do :-)... I've always had a particularly heavy thing for ungulates in general and camels in particular since I was 13 or 14, and since Llamas are both camelid and absolutely gorgeous, it didn't take much for me to become besotted. I have been to Peru twice, to be with them in their homeland, and I am glad to be doing my bit to promote universal Llama-awareness :-)

> How did you get published with HES?

I met Jay Balakrishnan at the first show I exhibited at, in London. That was with Defenda/Andes Attack, which was a pretty poor and buggy game, but it was written in machine code and not BASIC like 99 percent of the crap on the market at that time, and it caught Jay's eye. He asked me if I could put it on ROM, and I said "yeah!" (while internally thinking "I wonder how the hell you go about doing that them?")... so I signed up to do games for Llamasoft in the UK/Europe, and ROM versions for HES. Did a couple for them before things took off really big (with Gridrunner). I bumped into Jay on the Internet a few months ago - he's still in the biz, doing fine, and has been busy adding new Balakrishnans to the world too :-)... one of these days we are going to meet up for curry.

> Describe your relationship with those who published you?

HES were always honest and fair, which was a relief, since prior to Llamasoft I had got burned a couple of times. HES were always straight up with me and made me somewhat wealthier than a 21-year-old kid can usually expect to be, so I have no complaints there. Post-HES, I can honestly say that the guy who I worked for for most of the time was the most decent bloke I have ever met, as charismatic as Jesus, cleverer than Turing, the best coder in the known Universe, and should have won the Nobel Prize for game design. (I was self employed.).

Seriously though... apart from HES and being self employed, I have only really worked for Atari, which was cool, since I was actually *hanging out* with some of the people who had designed and made that very same Vic 20, and my old VCS, and fully 90 percent of all the computers I owned over the years... it was every kid Vic coder's dream come true, to have the guys that actually made those machines know and like you personally, and appreciate your work. Of course in the light of what happened to Atari, ultimately it was disappointing what happened, but I enjoyed my relationship with Atari and the Tramiel crew a great deal, I did some good work there, and I don't regret a minute of it.

My current employers I can't say a lot about, but they're an excellent bunch we are doing some *amazing* things, and there are a few familiar faces around from the old days too :-). The body of Atari may be departed now but there are some portions of the soul which yet survive :-)

> without being specific, describe the payment for your published work (EG., good bad unfair, fair, etc...)

Good. whenever I have fallen in with good people, they have always paid me fairly and well. I can't complain.

> Did your work on the VIC-20 help you to get where you are today in your career? what are you doing these days?

Yes, definitely. I really can't talk at all about my current work, but if I were to say that I have just coded quite a complex piece of transformation/clipping/scan-conversion code in 2K, you would get some idea of how much that old discipline of being able to get a lot of goodies in not a lot of space still stands me in good stead today :-)

> what do you think about the VIC-20 emulators and the effort to preserve your works for future generations of historical computer enthusiasts?

I think emulators are a wonderful thing. It means that now our old games and systems are in the digital domain, and proliferating across the planet - they are *immortal*. Somebody, somewhere, will always have a copy and will always be able to run them on an emulator of an emulator of an emulator or whatever... Being digital, they will never erode by being copied... perfect copies of our old games will be around in the datasphere, *forever*. Somebody 1000 years from now will be able to do research on the early days of computers, and they *will be able to play Gridrunner*. I think that's amazing, and for that reason, my personal take on the emulation scene is: if code is old enough that it can run on emulators, then it should be in the public domain, because I am certainly not going to be making anything on it by that time! So as far as I am concerned, as long as they are freely distributed and not sold for profit, all old Llamasoft game images for use on emulators can be freely uploaded on any site anywhere, with my full permission. I hate it when you go to download an emu and there are no games because everyone is so scared of getting busted by some selfish old dinosaur. So - emu sites everywhere, feel free to use my Llamasoft game images.

well, have a happy Halloween - I know I will, I am going to Hawaii for the weekend :-)

cheerz an' cya on the wirezzz...

\
(:-) - Y a K
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Tom Griner Remembers the VIC-20

- from an interview conducted by Rick Melick on October 28, 1996

REVIEW: Here is the game that almost challenges Omega Race as the best Vic 20 game. Choplifter was a very popular and successful game on the C64. All the elements that made the C64 version so good are all here on the Vic. The graphics are very good. There are a number of terrific little touches in the graphics such as the flapping flag on your base, the little POWs waving to be rescued and some very good parallax scrolling in the stars and as you cross your boundary line. The object of the game is to rescue your POWs from the enemy. As you fly your helicopter into enemy territory you are attacked from the ground by tanks and the air by jet fighters. There is some good sound, particularly the whooshing of your rotor blades. Choplifter was programmed by Tom Griner, one of the leading game programmers for the Vic 20, who made quite a number of excellent games for the Vic, arguably pushing it further than any other programmer. My Score - 10/10. -Tonks(RT#70, 6/2003)

> Where did you get your ideas for games? How did you plan a game?

Many of my best Vic20 games (such as Astroblitz or Predator) were done based (roughly) on the general game play of their arcade games. Some of the last games I did were "ports" (conversions/reimplementations) of Robotron and Stargate for the Commodore C64 computer. This was done under contract with AtariSoft and Williams. That was exciting to actually work on "real versions" of those games with the blessing of the original manufacturer. The flip side of my inspiration was the challenge to actually making a "pip squeak" computer actually do these things. I had just learned to program, and felt like I had something to prove. Just as a lot of "demo coders" feel that have to one up their peers with next best graphic routine, I felt I had to one-up all the other game programmers by showing that I could make the Vic20 do something it hadn't done before. This was not at all a formal competition - it was just something in the back of our heads - that if we do something amazing, there could be some other programmers (that we respected) who might be impressed with what we did. I would have to say in summary, that for the most part, all my game programming was done for my own personal gratification and I likely would have done it even if no else were interested.

> How old were you when you programmed the VIC-20?

In the range of 16-18 years old.

>How many hours did you spend each day programming? Where did you do your coding?

For the first few games, I was "highly motivated." As you hear about a lot of "nerd programmers", I would stay up sometimes for 30 hours trying to implement an idea. Basically, the cycle would be that I was just going to school doing my normal thing, then I would get inspired with an idea (basically a version of a completed game) and I would feel driven to focus a lot of intensity on that project until it was done. Somehow I managed to fit school in along side the game programming, but I am sure my teachers noticed that I was a little distracted when I was lost in thought about a game I was working on. Since I was not a professional programmer, and I had no "track record," my early programming was done on a used VIC-20 computer on a black and white fuzzy TV in a corner of our small rented house.

>What were some of the unique challenges to programming the VIC-20, and how did you overcome them?

Well, as you may know, the VIC-20 didn't have a lot of RAM even by the standards of 1982... It was a very "entry level" computer. As with some of the dedicated game consoles (such as the Atari 2600) games had to be coded to fit into a very small PROM carts... So the game coding had to be very efficient. All the best Vic-20 games were hand coded in assembler by people who knew how to write "tight" code. This would also help in the "game play" area since the system CPU wasn't a speed demon and needed to be burdened with as little code as possible.

When I started writing Vic-20 games the only other games available were "character based" (since the vic-20 didn't have bitmapped graphics built in). I realized it would be a big improvement to have bitmapped graphics, so I developed a way of remapping that character fonts to simulate a bit mapped display. This was a sort of obvious idea to some, but I was among the first to actually make it happen in a usable way.

Oh - my only storage device was an abysmally slow tape drive. Often I would code entire games (typing in 6502 opcodes for a couple of hours) and then try running it (without having saved it all) because I was so anxious to see if would actually work. If it had any bugs, I might have to start typing in all over again! I had a binder of paper pages where I would just start writing down hex opcodes based on an idea that I wanted to implement. A couple of games were actually written down 100% on paper before I ever typed them in - and they ran as-is the first time I tried to make them go. Today, I have far too many "other" things on my mind to imagine being able to go to those extremes!

There were a lot of creative tricks to be played with the low res graphics, limited colors and "odd" sound chip. Everything seemed like a challenge.

In a way though, having a very limited set of functions and a very simple CPU made life easier. Games from that time tended to be somewhat "obvious" and simple to understand. I think that is one of the things people liked about them.

> Does the VIC-20 hold a special place for you, or was it no more or no less significant than the computer sitting on your desk right now?

At one point in my life I was glad to have gotten past my teenage game playing obsession... I gave away my Vic20 and all my original game carts. I didn't have any Vic20 anything anymore... Now, I too am caught up in the recent nostalgia and (just like you) have gotten a copy of the Vic20 emulator and fired up the old games. In some ways I am embarrassed to say that I spent a bunch of time writing crude games that are so low res that they look quite silly these days, but in other ways I am proud of my accomplishment.

I hope to find a Vic20 emulator for the PC that can emulate the sound chip. I think much of the experience of playing those games is lost if you don't have the original sound!

These days I spend most of my time writing C, C++, perl code for Sun Unix Sparc workstations... Also, I have the Vic20 emulator going on a IBM Thinkpad 760ED which I carry around with me for work purposes. It is sort of "cool" because I have a bunch of MPEG2 video CDROMs that I put together to run on the latops MPEG2 decoder.

> How did you get published with H.E.S & Creative Software?

A brief history: Across the street from my high school was a small store called "Mr. Calculator". It was a calculator store owned by some Japanese company. They got a Vic-1001 (Japanese precursor to the Vic-20) as a demo machine to put in the glass case at the front of the store. It came with a couple simple games written in BASIC. Since I was "hanging out" in the store to play with their Commodore PET (with the "chicklet keyboard") the store owner asked if I could "convert" their BASIC game demos from Japanese to English. I looked at the games, figured out what they did and said that I thought I could rewrite them better in machine code rather than try to "fix them". After doing a few, I started just writing unique games... The President of Creative Software walked into the store a few weeks later and said "who is this guy who is giving away all this great Vic-2O software?". He was a bit startled to find a "kid" sitting there programming, but he offered me a royalty based marketing arrangement. (I think I signed up for a pretty lame deal, but money wasn't my main interest at that point). Over the next year or so I wrote a bunch of games which Creative Software was selling "all over the place". A couple of HES people kept calling me saying that I would be much happier working for them. I pretty much ignored them for a long time because things seemed to be working fine at Creative... But after a while, Creative grew a lot and started telling me that they wanted to have professional idea people design the games on "scoreboards" and just have me code them. They then said that they wanted to only sell "proven" ideas. After they pretty much forced me to do the "choplifter" port (which I only marginally enjoyed doing), I decided to give HES a try since I felt I could be more creative there.

While I was at HES the Vic2O market dwindled away and HES pretty much closed do-. I liked the people there a lot, but the market just wasn't there to support them.

> Describe your relationship with those who published you?

While at Creative, I was pretty much a free-lance loner. For the most part, I would just show up at their door once a month (or so) and drop off a completed game.

There were two partners who ran Creative, one of which I liked a lot just because he was a very nice guy... The other guy was very "driven", but I never felt felt like we ever became friends. In hindsight, I think he was a big asshole that I never should have gotten involved with in the first place.

At HES, there were a lot of people who really enjoyed the games and seemed to be having a lot of fun. It really is too bad that they couldn't transition to another platform and keep that company going. They started trying to convert from the Vic-2O/C-64 market over to the Atari 520/1040 ST which just didn't work out as a game platform. In hindsight, they should have just gone on vacation for a few years in 1986, then started selling IBM PC games in 1990...

> Without being specific, describe the payment for your published work? (EG, good, bad, unfair, fair, etc...)

Well, being a part time student, with programming as my first real job - everything seemed wonderful to me. I was definitely making more than other students with part time jobs... But from what I gather, I was being ripped off all over the place. My contract with Creative only gave me a small payment (something like 5% of profits) only in certain markets for certain media. My games were distributed outside of the terms of my contract in ways which I made no money, but the company did... Basically, I ran "blind" just getting periodic royalty checks which seemed to be in almost random amounts. I guess sales were sporadic... To be honest, I didn't spend a lot of time trying to keep track of how well things sold. I just worried about the code I was writing.

In hindsight, I saw them grow from a 2 person "closet operation" to a large company with perhaps 50 people. They moved a couple of times to larger buildings while I was primarily the only Programmer working for them. Eventually they hared some other programmers (such a Jaron Lanier of VPL fame), but I don't think any of their other titles did as well as the ones I wrote.

When I went to work for HES, I was more concerned about living on my own and making a living. I asked for (and received) advances based on future sales so I knew more what sort of money I would be making. I think HES tried to be more open about wanting everyone to share in any success, but the reality was that when I joined with them, the Vic20 "heyday" was already over...

> Do you have any idea how many Choplifter cartridges were sold?

As you can tell from some of my earlier notes - Choplifter wasn't my favorite game. I guess Creative was right to get me to rewrite that thing for the Vic20, but I would have much rather continued to implement my own ideas. I really had little idea how many of carts were sold overall. I knew things were doing well because I saw my games in some big stores (such as Sears and K-Mart)... But I can't tell you exactly how many sold.

Oh - I should probably mention that I kept a Vic20 users mailing list going for a while. I had put hidden messages in some of my ROM carts to "write me a letter if you find this message" . I got letters from all over the world, and kept a list of about 100 addresses for a while. I would periodically send out updates to everyone saying "these are the people that found my messages". What I probably ended up doing was help start an underground market for trading copies of my games... But oh well...

> Did your work on the VIC-20 help you to get where you are today in your career? What are you doing these days?

I don't think my game programming has made much difference in my -resume or long-term employment options. My career "evolved" into one of "Systems Administration", "Systems Programming", "Systems Engineering", etc... Basically I became much more corporate. I have definitely always worked with computers, but in the last 6 years it has been writing software used in banks. I have done a lot of work with global videoteleconferencing, molecular Biology, Network Design, Web page design, etc, etc .. Not as exciting or fun as the game work, but I feel that I am in demand in areas that have much more stable, long term employment prospects.

> What do you think about the VIC-20 emulators and the effort to preserve your works for future generations of historical compute enthusiasts?

I love it. There is really something to be said for keeping these old things around for future generations to reference. The computer industry is still in its very early stages, and there are a lot of lessons to be learned by studying what has happened in the past. By going back and playing my old games, I may get inspired to go on and do something new. It certainly brings back a lot of long lost memories.

There is a lot of new stuff around that is "better" than the old, but it is nice to be able to be able keep the best of the past available as a source of inspiration and nostalgia.

There are a lot of 70s and 80s "retro" things coming into fashion I don't want to feel like too much of a "dork" by buying a bunch of "living in the 80s" CDs and watching "Star Wars" on video over and over, but still it is fun to check back into eras that have gone by. If only I had collected Microsoft stock instead of game software!

-TEG

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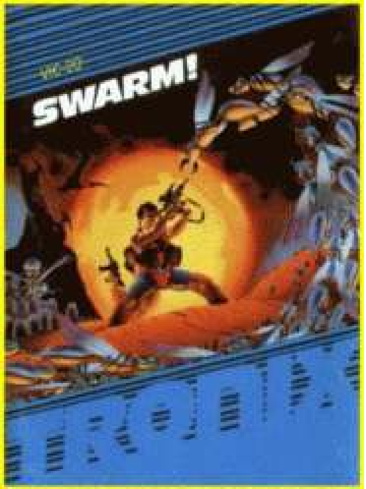
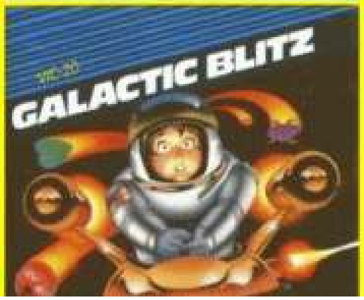
Jimmy Huey Remembers the VIC-20

- from an interview conducted by Rick Melick on October 28, 1996





SWARM REVIEW: In Swarm, you are a tiny person who races around the bottom of the screen, attempting to blast a swarm of attacking insects. Some drop straight down like the spiders in Centipede. Others scroll down more slowly, although none can be said to have segments. The movement is distinctly chilopodic, however. Zillions of little dots have to be shot, and there are butterflies, birds, and other nice targets from which to select. The whole scenario looks like yet another John Carpenter remake of Hitchcock's The Birds. You start with five little guys with which to fend off the invasion and a mind-boggling coice of 40 expertise levels. The top difficulty level is fun to try just once, just to give new meaning to the term annihilation. Beginners will have more fun at the easier settings. Swarm has a few nice touches, but is a bit too free-form to suit me. I prefer the regimentation of a Galaxian style game. Give me disciplined aliens, so I can plan my moves a few femtoseconds in advance. -David Busch(CREATIVE COMPUTING VOL. 9, NO. 9 / SEPTEMBER 1983 / PAGE 150)

SIDEWINDER REVIEW: Sidewinder is the best Defender variation for the Vic-20 I have seen. Its impressive array of features can be attributed in part to Tronix's use of the 8K memory expander--a rarity in a sea of software aimed at the lowest common denominator. Sorry, but you folks who bought your Vic-20s just to play games are going to have to purchase one of those nasty programmer-type memory Expansion Cartridges to enjoy this great contest. A fast-moving jet helicopter is your vehicle; you have four with which to protect the planet from vicious invaders, including the dreaded black satellite. You may set the initial difficulty level from one to ten, depending on how brave or foolish you feel. Joysticks maneuver the chopper on its mission, which involves shooting down the bad guys while protecting a series of radar towers. The scanner may or may not be of help, depending on your ability to focus your attention on two parts of the screen at once. When destroyed, the radar towrs collapse in a messy lump that spoils the landscape and serves to remind you of your recent defeat. Worse, when all the towers have been eliminated, the scene turns black and you are forced to operate in the dark. A free chopper is awarded at 3000 points. Another may be bestowed later in the game -- I never got that far. Like Defender, this can be a difficult game. -David Busch(CREATIVE COMPUTING VOL. 9, NO. 9 / SEPTEMBER 1983 / PAGE 150)

>Where did you get your ideas for games? How did you plan a game?

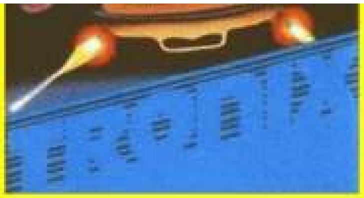
Most of my vic 20 stuff were either complete rip-offs or heavily influenced by coin-op games. Really not much imagination involved here. I programmed a little bit, looked at the results and just followed the flow. I was pretty fanatical about making a game play well, though

>How old were you when you programmed the VIC-20?

I think 21 or 22.

>Does the VIC-20 hold a special place for you, or was it no more or no less significant than the computer sitting on your desk right now?

I still have fond memories of programming the vic-20, but not fond enough to keep a vic 20 lying around. Got rid of them years ago!



>How did you get published with TRONIX What is the meaning of DRAGONFLY?

My first computer was an Ohio Scientific (OSI), a very very funky machine. The hardware was unreliable. Even though it came with a disk drive, there was no real DOS to speak of. To save and load files, you actually had to specify track numbers. Because the machine was so low-level, I ended up doing a lot of assembly programming, which helped me out when I started to do vic-20 programming. I hooked up with other OSI users in the LA area and ended up self-publishing a bunch of games under the Interesting Software label. One of them was a precursor to Night Crawler, a centipede clone called Worm War. There wasn't much money to be made off those games and decided to give the vic 20 a shot later that year. I bought it with the intent of selling some quick 'n dirty games. I wrote a one or two simple hybrid basic/asm games. Then wrote Space Phreeks/Galactic Blitz using vicmon. Vicmon was so much of a pain to program in I eventually caved in and bought an Apple][(with a real assembler) to use as a development machine. The core group at that time was: me, Jim Lin, Hal Lafferty and Corey Ostman (a whiz-kid 16 year old prodigy). Hal got us hooked up with Softsel (the parent company of Tronix), which ended up publishing the vic-20 games that we had originally sold ourselves.

>What were the differences between SWARM! and NIGHT CRAWLER, and why?

I don't know if you remember, but Atari was breathing down everyone's throats during at that time. In fact, we got a letter from Atari threatening legal action if we continued selling the game. Tronix couldn't sell Night Crawler without getting sued by Atari, so I modified the game. Changed the mushrooms to stars, unlink all the worm segments and turned them into bugs. That was pretty much it.

>Describe your relationship with those who published you?

It was pretty cool at first, but the last game that I did didn't do well, probably because of the vic-2O market collapse and a weak title; I ended up getting a negative royalty check from Tronix - a $12,000 bill!

Tronix also put out some really embarrassing press releases - told Infoworld that I was a UCLA studentt when I had actually dropped out a year or two earlier. They also put out fliers with really silly, made-up quotes. Sheesh.

Other interesting tidbits: Nightcrawler was pirated in the UK by Rabbit Software. We would have never known, but someone at Softsel's UK office spotted the game in stores there. Probably fearing a lawsuit, the head of Rabbit Software, John Savage came down to LA. Promised not to sell our games anymore. He seemed like a pretty nice guy. Jim Lin stupidly sold Mr Savage the overseas rights to Quackers. Never saw a dime. I heard later that Mr. Savage had committed suicide (blew his brains out), after being saddled with huge debts.

>Did your work on the VIC-20 help you to get where you are today in your career? What are you doing these days?

It probably helped out my career. I had dropped out of school and really had no clue what to do when I started programming these games. I wasn't a good enough programmer at that time to land a real job. The vic-20 gave me a chance to a get a foot in the door. After looking at some my old games, it's surprising how weak they were (technically) compared to other titles on the market at that time. I was using simple character graphics when others were programming in bitmapped mode!

--Jimmy

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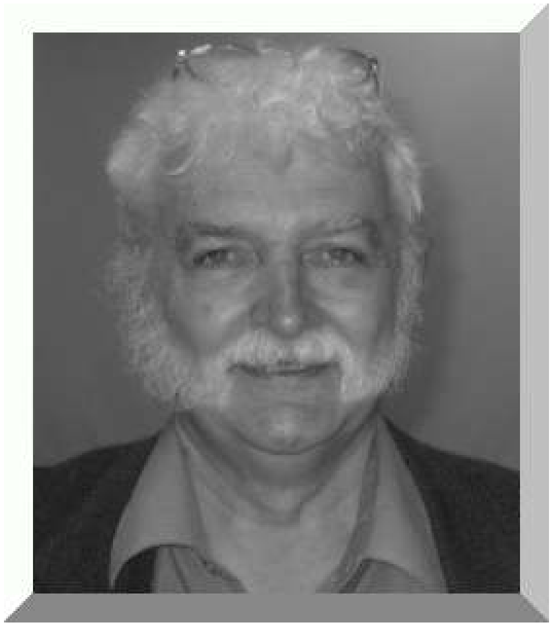
Jim Butterfield Remembers the VIC-20

- from an interview conducted by Rick Melick on October 27, 1996



>What was your relationship with Commodore, and how did you get to be such a VIC-20 guru?

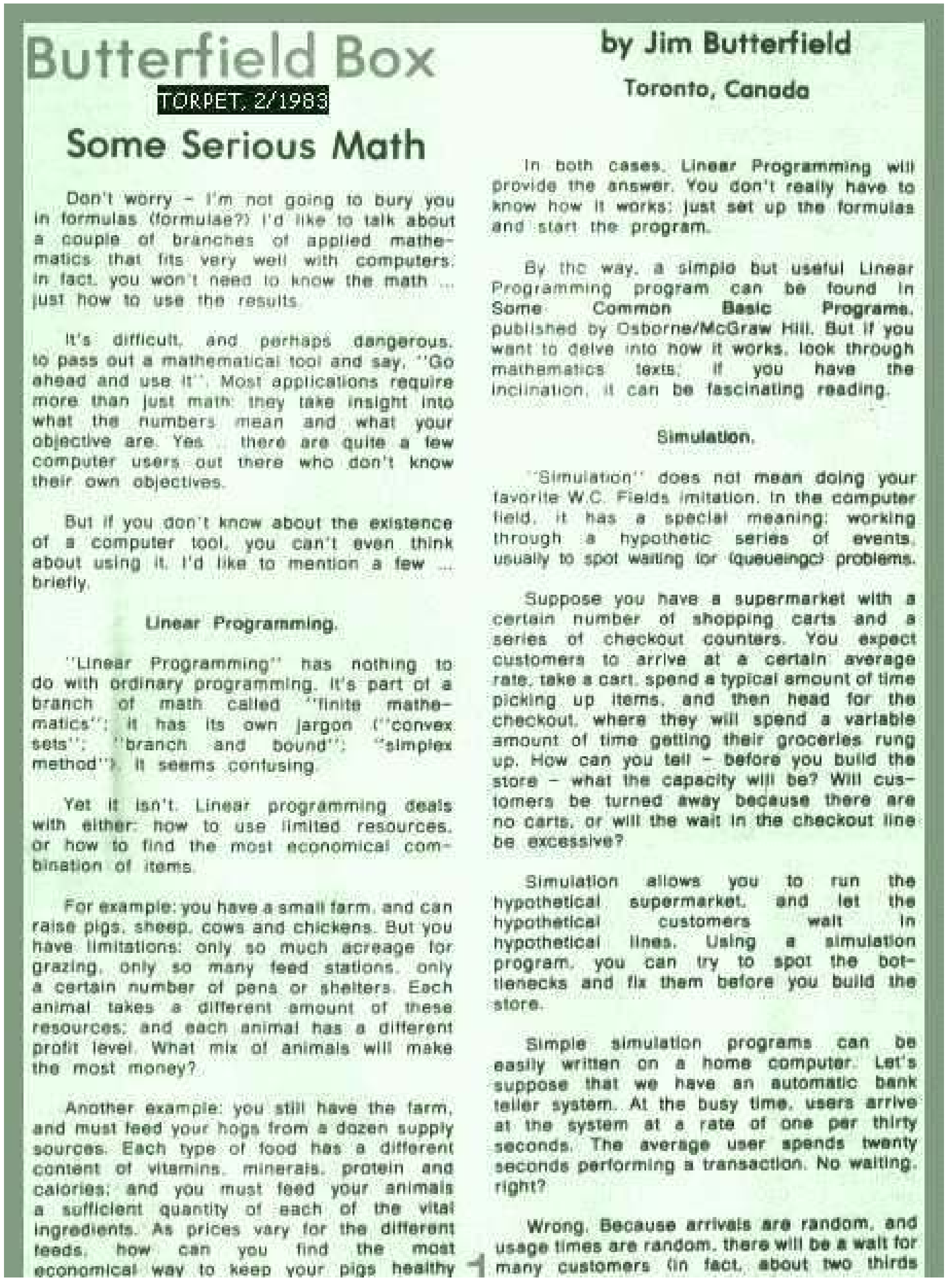
I had no business relationship with Commodore, which freed me to tell of anything I discovered (Commodore itself was inhibited by nondisclosure agreements). But I found Commodore personnel to be very supportive and helpful when I had questions.

Before the VIC-20, I had performed a full disassembly and analysis of earlier Commodore machines (PET, 8032, etc.). Although the VIC-20 had new features, much of it was already familiar ground to me.

> What were some of the unique challenges to programming the VIC-20? How did you help people overcome them?

As compared to other Commodore machines? There were two: limited amount of RAM, and the fact that various configurations of the VIC-20 caused programs to load to varying addresses.

To handle these, I generally advocated two types of discipline: efficient coding that didn't waste memory, and an understanding of how other machines might differ from the one you had. "Efficient coding" is a point of view, of course: such techniques as leaving out the REM (remark) lines would be bad coding in other environments, where memory was not so limited.



Butterfield Box

TORPET, 2/1983

by Jim Butterfield

Toronto, Canada

Some Serious Math

Don't worry – I'm not going to bury you in formulas (formulae?) I'd like to talk about a couple of branches of applied mathematics that fits very well with computers. In fact, you won't need to know the math ... just how to use the results.

It's difficult, and perhaps dangerous, to pass out a mathematical tool and say, ''Go ahead and use it''. Most applications require more than just math: they take insight into what the numbers mean and what your objective are. Yes ... there are quite a few computer users out there who don't know their own objectives.

But if you don't know about the existence of a computer tool, you can't even think about using it. I'd like to mention a few ... briefly.

Linear Programming.

''Linear Programming'' has nothing to do with ordinary programming. It's part of a branch of math called ''finite mathematics''; it has its own jargon (''convex sets''; ''branch and bound''; ''simplex method''). It seems confusing.

Yet it isn't. Linear programming deals with either: how to use limited resources, or how to find the most economical combination of items.

For example: you have a small farm, and can raise pigs, sheep, cows and chickens. But you have limitations: only so much acreage for grazing, only so many feed stations, only a certain number of pens or shelters. Each animal takes a different amount of these resources; and each animal has a different profit level. What mix of animals will make the most money?

Another example: you still have the farm, and must feed your hogs from a dozen supply sources. Each type of food has a different content of vitamins, minerals, protein and calories; and you must feed your animals a sufficient quantity of each of the vital ingredients. As prices vary for the different feeds, how can you find the most economical way to keep your pigs healthy

In both cases, Linear Programming will provide the answer. You don't really have to know how it works; just set up the formulas and start the program.

By the way, a simple but useful Linear Programming program can be found in Some Common **Basic** Programs, published by Osborne/McGraw Hill. But if you want to delve into how it works, look through mathematics texts; if you have the inclination, it can be fascinating reading.

Simulation.

''Simulation'' does not mean doing your favorite W.C. Fields imitation. In the computer field, it has a special meaning: working through a hypothetic series of events, usually to spot waiting for (queueingc) problems.

Suppose you have a supermarket with a certain number of shopping carts and a series of checkout counters. You expect customers to arrive at a certain average rate, take a cart, spend a typical amount of time picking up items, and then head for the checkout, where they will spend a variable amount of time getting their groceries rung up. How can you tell – before you build the store – what the capacity will be? Will customers be turned away because there are no carts, or will the wait in the checkout line be excessive?

Simulation allows you to run the hypothetical supermarket, and let the hypothetical customers wait in hypothetical lines. Using a simulation program, you can try to spot the bottlenecks and fix them before you build the store.

Simple simulation programs can be easily written on a home computer. Let's suppose that we have an automatic bank teller system. At the busy time, users arrive at the system at a rate of one per thirty seconds. The average user spends twenty seconds performing a transaction. No waiting, right?

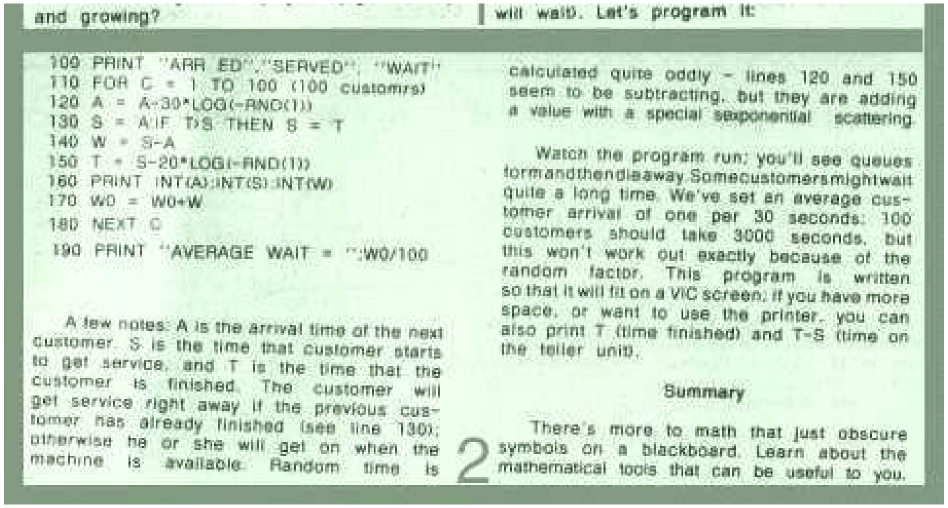
Wrong. Because arrivals are random, and usage times are random, there will be a wait for many customers (in fact, about two thirds

> Does the VIC-20 hold a special place for you, or was it no more or no less significant than the computer sitting on your desk right now?

It was important in Commodore's time line, as the first color computer and the first that had a "game" image - such things as graphics, sound, joy-sticks and paddle interfaces were new to the Commodore product line.

And it attracted a whole new brand of users: not just game players, but people who hadn't been able to afford a home computer before.

The VIC-20 was the best machine for hooking up to a TV set, too. Its large "plump" letters were easy for kids to read, or even for displays intended for group viewing.



and growing?

will wait. Let's program it:

```
100 PRINT "ARR ED","SERVED", "WAIT"
110 FOR C = 1 TO 100 (100 customrs)
120 A = A-30*LOG(-RND(1))
130 S = A:IF T>S THEN S = T
140 W = S-A
150 T = S-20*LOG(-RND(1))
160 PRINT INT(A):INT(S):INT(W)
170 W0 = W0+W
180 NEXT C
190 PRINT "AVERAGE WAIT = ":W0/100
```

A few notes: A is the arrival time of the next customer. S is the time that customer starts to get service, and T is the time that the customer is finished. The customer will get service right away if the previous customer has already finished (see line 130); otherwise he or she will get on when the machine is available. Random time is calculated quite oddly - lines 120 and 150 seem to be subtracting, but they are adding a value with a special sexponential scattering.

Watch the program run; you'll see queues formandthendisaway Somecustomersmightwait quite a long time. We've set an average customer arrival of one per 30 seconds: 100 customers should take 3000 seconds, but this won't work out exactly because of the random factor. This program is written so that it will fit on a VIC screen; if you have more space, or want to use the printer, you can also print T (time finished) and T-S (time on the teller unit).

2

Summary

There's more to math that just obscure symbols on a blackboard. Learn about the mathematical tools that can be useful to you.

> Can you describe some of your educational experiences and other interests?

Before I was involved in microcomputers, I had spent some time in industrial training. My interests ranged from math to music. It was interesting to see the VIC-20 being the first popular bridge that linked computers to sound and sight .. in its own way, it was an early "multi media" machine.

> Did your work on the VIC-20 help you to get where you are today in your career? What are you doing these days?

My work on microcomputers was a sideline for some years (including the VIC-20 years). I'd written about microcomputers before, and have written about them since, of course. Although the VIC-20 is a fascinating piece of personal computer history, I don't see it as having a major impact on myself.

I'm semi-retired these days. I do a couple of columns for Commodore World magazine (published by CMD), so I'm still writing about the 8-bit environment.

-- Jim

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